DOCUMENT RESUME

ED 083 463 CE 000 488

AUTHOR	Stromsdorfer, Ernst W.; Fackler, James S.
TITLE	An Economic and Institutional Analysis of the Cooperative Vocational Education Program in Dayton, Ohio.
SPONS AGENCY	Manpower Administration (DOL), Washington, D.C. Office of Research and Development.
REPORT NO	DLMA-82-18-71-24-2
PUB DATE	Aug 73
NOTE	488p.
AVAILABLE FROM	National Technical Information Service, Springfield, Va. 22151
EDRS PRICE	MF-$0.65 HC-$16.45
DESCRIPTORS	Academic Performance; Career Education; Case Studies; Comprehensive High Schools; *Cooperative Education; *Economic Research; *Educational Research; Employment; Program Evaluation; Questionnaires; *Secondary Grades; Statistical Studies; *Vocational Education; Wages

ABSTRACT

This case study examines the economic and institutional impact of cooperative vocational education on the employment, earnings and educational performance of the 1966 and 1970 graduation cohorts of Patterson High School, Dayton, Ohio. The performance of these groups is contrasted with that of students in the comprehensive high schools for the same time period. The results of this study, based on mail questionnaire data and complete high school scholastic records, indicate a mixed picture of performance for cooperative education, especially when models employing multiple regression are used. However, the program is clearly a desirable educational alternative for some high school students. A bibliography of the economic analysis of cooperative vocational education as well as a survey of the methodologies of these studies is included in the analysis. (Author)

ED 083463

AN ECONOMIC AND INSTITUTIONAL ANALYSIS OF THE COOPERATIVE VOCATIONAL EDUCATION PROGRAM IN DAYTON, OHIO

Ernst W. Stromsdorfer and James S. Fackler

Department of Economics
Indiana University
Bloomington, Indiana

March, 1973

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

This report was prepared for the Manpower Administration, U. S. Department of Labor, under research and development contract No. 82-18-71-24. Since contractors conducting research and development projects under Government sponsorship are encouraged to express their own judgment freely, this report does not necessarily represent the official opinion or policy of the Department of Labor. The contractor is solely responsible for the contents of this report.

CE 000 488

FILMED FROM BEST AVAILABLE COPY

DO NOT DUPLICATE THIS SIDE OF PAGE IN MAKING COPIES OF FINAL REPORT

INSTRUCTIONS FOR COMPLETING FORM NTIS-35 (10-70) (Bibliographic Data Sheet based on COSATI Guidelines to Format Standards for Scientific and Technical Reports Prepared by or for the Federal Government, PB-180 600).

1. **Report Number.** Give each report a unique alphanumeric designation consisting of the letters DLMA followed by the contract or grant number and an additional number indicating the first, second, etc., report under the project, e.g., DLMA 81-37-70-18-1.

2. Leave blank.

3. **Recipient's Accession Number.** Reserved for use by each report recipient.

4. **Title and Subtitle.** Title should indicate clearly and briefly the subject coverage of the report, and be displayed prominently. Set subtitle, if used, in smaller type or otherwise subordinate it to main title. When a report is prepared in more than one volume, repeat the primary title, add volume number and include subtitle for the specific volume.

5. **Report Date.** Use the date of issue (or delivery to the Department of Labor), not the date of approval of the draft or the termination of the contract or grant period.

6. **Performing Organization Code.** Leave blank.

7. **Author(s).** Give name(s) in conventional order (e.g., John R. Doe, or J.Robert Doe). List author's affiliation if it differs from the performing organization.

8. **Performing Organization Report Number.** Insert if performing organization wishes to assign this number.

9. **Performing Organization Name and Address.** Give name, street, city, state, and zip code. List no more than two levels of an organizational hierarchy. Display the name of the organization exactly as it should appear in Government indexes such as **USGRDR-I.**

10. **Project/Task/Work Unit Number.** Leave blank.

11. **Contract/Grant Number.** Insert contract or grant number under which report was prepared, prefaced by DL.

1 **Sponsoring Agency Name and Address.** Already filled in.

13. **Type of Report and Period Covered.** Indicate interim, final, etc., and, if applicable, dates covered.

14. **Sponsoring Agency Code.** Leave blank.

15. **Supplementary Notes.** Enter information not included elsewhere but useful, such as: Prepared in cooperation with . . . Translation of . . . Presented at conference of . . . To be published in . . . Supersedes . . . Supplements . . .

16. **Abstract.** Include a brief (200 words or less) factual summary of the most significant information contained in the report. If the report contains a significant bibliography or literature survey, mention it here.

17. **Key Words and Document Analysis.** **(a). Descriptors.** Select from attached Key Words-Descriptors those terms that identify the subjects investigated and the methods used. Choose carefully, for these terms will be used as index entries for retrieval of report.
(b). Identifiers and Open-Ended Terms. Enter project names, code names, etc., or other relevant terms not in list of key words.
(c). COSATI Field/Group. Select from attached COSATI Subject Categories. Enter only the code numbers, e.g., 5J, to designate field and group(s).

18. **Distribution Statement.** Indicate other sources of copies if any, and give address of source, together with price (if any).

19 & 20. **Security Classification.** Do not submit classified reports to the National Technical

21. **Number of Pages.** Insert the total number of pages, including this one and unnumbered pages, but excluding distribution list, if any.

22. **Price.** Insert the price set by the National Technical Information Service or the Government Printing Office, if known.

BIBLIOGRAPHIC DATA SHEET	1. Report No. DLMA 82-18-71-24-2	2.	3. Recipient's Accession No.

4. Title and Subtitle
An Economic and Institutional Analysis of the Cooperative Vocational Education Program in Dayton, Ohio

5. Report Date
August, 1973

6.

7. Author(s)
Ernst W. Stromsdorfer and James S. Fackler

8. Performing Organization Rept. No.

9. Performing Organization Name and Address

10. Project/Task/Work Unit No.

11. Contract/Grant No.
DL 82-18-71-24

12. Sponsoring Organization Name and Address
U.S. Department of Labor
Manpower Administration
Office of Research and Development
1111 20th St., N.W., Washington, D. C. 20210

13. Type of Report & Period Covered
Final

14.

15. Supplementary Notes

16. Abstracts

This case study examines the economic and institutional impact of cooperative vocational education on the employment, earnings and educational performance of the 1966 and 1970 graduation cohorts of Patterson High School, Dayton, Ohio. The performance of these groups is contrasted with that of students in the comprehensive high schools for the same time period. The results of this study, based on mail questionnaire data and complete high school scholastic records, indicate a mixed picture of performance for cooperative education, especially when models employing multiple regression are used. However, the program is clearly a desirable educational alternative for some high school students. A bibliography of the economic analysis of cooperative vocational education as well as a survey of the methodologies of these studies is included in the analysis.

17. Key Words and Document Analysis. 17a. Descriptors

Earnings
Economic Analysis
Education
Employment
Students

17b. Identifiers/Open-Ended Terms

Cooperative Vocational Education

17c. COSATI Field/Group

18. Availability Statement Distribution is unlimited. Available from National Technical Information Service, Springfield, Va. 22151.

19. Security Class (This Report)
UNCLASSIFIED

20. Security Class (This Page)
UNCLASSIFIED

21. No. of Pages
470

22. Price

FORM NTIS-35 (REV. 3-72)

THIS FORM MAY BE REPRODUCED

USCOMM-DC 14952-P72

PREFACE

This study seeks to determine the educational and economic effects of cooperative vocational education at the secondary level. It is a case study of a program in Dayton, Ohio, one which has been in successful operation for several decades. This program is set forth as an ideal of its type. Indeed, satisfaction with the program is high in the city of Dayton. Morale among the faculty and staff at Patterson Cooperative High School in Dayton is high. The students enjoy the program and strongly approve of it. Clearly, this type of educational program is a potentially desirable alternative to other choices of secondary curricula.

More and more, cooperative education is being viewed as a meaningful educational investment at the secondary level. It is even seen by some as a panacea to the present ills of our secondary education system. The current interest among educators and government officials in "Career Education" and "Action-learning," to name two programs, is indicative of this increased interest. It is, in a way, ironical that interest in cooperative vocational education and its variants is increasing while traditional vocational education at the secondary level is coming under increasing attack. One wonders if cooperative education, "Career Education" or "Action-learning" can ultimately succeed where, some say, conventional vocational education has failed.

The answer to this question involves several ponderables and not a few imponderables.

First, is it the case that cooperative vocational programs truly yield the benefits attributed to them? Casual empiricism suggests they do. Yet, will these apparent results stand up under the scrutiny of more systematic social science evaluation?

Second, if the programs in their current educational, social and economic environments do yield substantial benefits, can such programs then be generalized to other less favorable environments? The program in Dayton, for instance, serves mainly a middle class clientele. How will such a program fare in an urban ghetto? Will employers across the nation be as receptive to the program as they are in an environment such as Dayton, Ohio, where strong local leadership set the program in motion and helped maintain its excellence and momentum?

Next, what structural changes might be needed in cooperative education to convert it into "Career Education" or "Action-learning"? Can the various vested interests against such change be overcome?

Finally, to keep this list short, to what degree does the success of such a program depend upon a bouyant labor market? If the program is heavily funded and generalized nationwide, at what point or under what conditions might student employment make inroads on adult employment such that attempts are made to truncate the program?

These and many other questions need to be answered before cooperative education can become even a partial cure for the alledged ills of today's educational system. This present study hopes to answer a few of the most pressing questions, but by its very nature cannot be more than a suggestive, even if appropriate, first step in the solution to the issues posed to it.

ACKNOWLEDGEMENTS

A research study of this nature requires the cooperative efforts of a variety of people. In an important respect the contribution of the principal investigator is far from the most critical.

In particular, the officials of the Dayton School System deserve the author's thanks for their kind cooperation and continuing expression of helpful goodwill. Mr. Nelson Whiteman, principal of Patterson Cooperative High School; Mr. Paul Snyder, Director of Vocational Education; Mr. Eugene Hodson, Director of Guidance; and Dr. Donald Oldiges, Director of Research, were of considerable assistance. Mr. Hodson, in particular, was most effective in facilitating the data collection process.

Mrs. Rose Wiener of Manpower Administration, U. S. Department of Labor, was project monitor of the study and provided firm and thoughtful guidance throughout the study. Her extensive background and understanding of the institutional aspects of education and manpower programs was an invaluable benefit to the authors. Mrs. Frances Wattenberg incisively reviewed the study procedures and preliminary report and corrected several incipient errors of method or judgment. Jay Munstuk, too, made useful suggestions to the methodology.

Dr. Herbert Brum, Department of Education, State of Ohio, was instrumental in facilitating the progress of the study at every stage.

Closer to home, Douglas Morrill and Henry H. Fishkind did a thorough job of researching the literature. Robert E. Keleher, Dr. Stanley Stephenson and Mrs. Vicky Felton provided additional graduate assistance on the study.

Mrs. Aurora Belmore effectively supervised a considerable body of coders and statistical clerks, while Mrs. Alice Li kept track of the finances in addition to her other research duties.

Robert Hogan, Jr., and Rudy Pozzatti performed most of the computer analysis, while Mrs. Charis Culver, Mrs. Joan Hongen and Mrs. Josephine Woo typed the various drafts and tables.

Dr. Charles Palit of the Wisconsin Survey Research Laboratory, University of Wisconsin, Madison, performed the sample design and wrote Appendix A on sampling procedures. Dr. Teh-wei Hu, Department of Economics, The Pennsylvania State University, provided considerable assistance on the various econometric problems of the study. Dr. Jeffrey Green at the Department of Economics, Indiana University, also provided crucial inputs to the regression analysis.

Finally, Mrs. Linda Parker and her department secretarial staff provided willing and expert secretarial back-up when the flow of paper began to exceed ecologically sound proportions.

I wish to express my gratitude to all these persons as well as the many student coders who are not named in person.

In addition, I wish to apologize for any errors that may remain in the study, and I hope that positive aspects of the study sufficiently overshadow these potential errors so as to facilitate the usefulness of the study in educational policy decision making.

E.W.S.

TABLE OF CONTENTS

Page

PREFACE i
ACKNOWLEDGEMENTS iii
TABLE OF CONTENTS v
LIST OF ILLUSTRATIONS viii
LIST OF TABLES ix

CHAPTER 1
THE PROBLEM AND ISSUES 1
A. The Problem 1
B. Objectives 1
C. The Study Base 2
D. Measures of Impact 2
E. Survey of the Literature on Evaluation of Cooperative Vocational Education: Methodological Issues 3
F. Survey of Measures of Educational Effect 6
G. Survey of Measures of Economic Effect 9
H. Issues with the Present Study 13
I. Summary and Plan of the Study 15

CHAPTER 2
DESCRIPTION OF THE STUDY SAMPLE 17
A. Introduction 17
B. The Original Mail Sample Group 18
C. The Study Sample 29
D. Environmental Factors, Study Sample 32
E. Summary 37

CHAPTER 3
EDUCATIONAL IMPACT OF THE COOPERATIVE VOCATIONAL EDUCATION PROGRAM 39
A. Introduction 39
B. Educational Characteristics of the Study Sample During High School: Gross Program Impacts 39
C. Post-High School Educational Experience 58
D. Voting Behavior 65
E. Summary 67

CHAPTER 4
THE RELATIONSHIP OF JOB SKILLS TO HIGH SCHOOL EDUCATION 69
A. Introduction 69
B. Main Source of Skills Relative to Occupation after High School 69
C. Relation of Employment Experiences to High School Curriculum 76
D. Summary 91

Page

CHAPTER 5
LABOR MARKET IMPACT OF THE COOPERATIVE VOCATIONAL EDUCATION PROGRAM 93
A. Introduction 93
B. High School Labor Market Experience 93
C. Post-High School Labor Market Experience 105
D. Summary 111

CHAPTER 6
IMPACT OF COOPERATIVE VOCATIONAL EDUCATION ON EDUCATIONAL PERFORMANCE 119
A. Introduction 119
B. The Analytical Models 122
C. Analysis of Results 128
D. Conclusions 157

CHAPTER 7
ECONOMIC IMPACT OF THE COOPERATIVE VOCATIONAL EDUCATION PROGRAM 159
A. Introduction 159
B. Methodological Considerations 159
C. Specifications of the Formal Models 164
D. Empirical Results: Analysis of the Models 166
E. Empirical Effects: Employment 170
F. Empirical Effects: Wage Rates and Earnings 198
G. Summary and Conclusions 219

CHAPTER 8
COMPARATIVE ANALYSIS OF COOPERATIVE AND NON-COOPERATIVE EMPLOYER EXPERIENCES AND ATTITUDES 225
A. Introduction 225
B. Potential for Program Expansion 225
C. Evaluation of the Cooperative Program by Participating Employers 233
D. Summary 238

CHAPTER 9
ANALYSIS OF THE RELATIVE COSTS OF THE COOPERATIVE AND COMPREHENSIVE HIGH SCHOOL PROGRAMS 239
A. Introduction 239
B. The Data 239
C. An Overview of Costs to Cooperative Vocational Education 243

CHAPTER 10
SUMMARY AND REVIEW 245
A. Introduction 245

Page

B. Methodology 245

C. Descriptive Analysis 246

BIBLIOGRAPHY 253

APPENDIX A
STUDENT SAMPLE DESIGN, EMPLOYERS SAMPLE DESIGN 257

APPENDIX B
LONG FORM MAIL QUESTIONNAIRE, SHORT FORM MAIL QUESTIONNAIRE 263

APPENDIX C
EMPLOYER QUESTIONNAIRE 277

APPENDIX D
SUPPLEMENTARY TABLES 285

APPENDIX E
SUPPLEMENTARY REGRESSIONS 349

APPENDIX F
DEFINITIONS OF CURRICULA 455

APPENDIX G
COMPARISON OF LONG AND SHORT FORM MAIL QUESTIONNAIRE SAMPLES 459

LIST OF ILLUSTRATIONS

Page

FIGURE 1
ANALYSIS OF CURRICULUM STRUCTURE ON GRADE POINT AVERAGE OF SENIOR OR LAST YEAR IN HIGH SCHOOL 120

FIGURE 2
ESTIMATED GRADE POINT AVERAGE, SENIOR OR LAST FULL YEAR IN HIGH SCHOOL, FOR MALES BY HIGH SCHOOL CURRICULUM 134

LIST OF TABLES

Page

TABLE 1
STRUCTURE OF ORIGINAL MAIL SAMPLE GROUP 19

TABLE 2
RESPONSE RATES OF MAIL RESPONDENTS 20

TABLE 3
ACADEMIC, VOCATIONAL, AND TOTAL CREDITS BASED ON PUPIL CUMULATIVE HIGH SCHOOL RECORD, TOTAL COOPERATIVE AND NON-COOPERATIVE HIGH SCHOOL SAMPLE 22

TABLE 4
BREAKDOWN OF ORIGINAL MAIL SAMPLE BY SEX AND COHORT 23

TABLE 5
DISTRIBUTION OF RESPONSE/NON-RESPONSE SAMPLE - BY SEX 24

TABLE 6
EDUCATIONAL CHARACTERISTICS OF PERSONAL FOLLOW UP, MAIL RESPONDENTS, AND NO RESPONSE SAMPLES 25

TABLE 7
SELECTED EDUCATIONAL CHARACTERISTICS PERSONAL FOLLOW-UP/MAIL RESPONSE SAMPLE 28

TABLE 8
PERCENT OF STUDY SAMPLE IN 1966 AND 1970 CLASS COHORTS 30

TABLE 9
BREAKDOWN OF STUDY SAMPLE BY SEX AND ETHNIC ORIGIN 31

TABLE 10
YEARS OF SCHOOLING FATHER COMPLETED, STUDY SAMPLE 33

TABLE 11
SOCIO-ECONOMIC STATUS OF FATHER'S OCCUPATION WHILE STUDENT ATTENDED HIGH SCHOOL, STUDY SAMPLE 34

TABLE 12
PER CAPITA FAMILY INCOME DURING SENIOR YEAR, IN DOLLARS, STUDY SAMPLE 36

Page

TABLE 13
CURRICULUM STRUCTURE AS A FUNCTION OF SEX, ETHNIC ORIGIN, AND CLASS COHORT, STUDY SAMPLE 41

TABLE 14
TOTAL CREDITS EARNED IN HIGH SCHOOL, STUDY SAMPLE 43

TABLE 15
SELECTED GRADE POINT AVERAGES AS A FUNCTION OF SEX, ETHNIC ORIGIN, AND CLASS COHORT, STUDY SAMPLE 45

TABLE 16
GRADE POINT AVERAGE, FRESHMAN YEAR, STUDY SAMPLE 47

TABLE 17
GRADE POINT AVERAGE, SENIOR OR LAST YEAR, STUDY SAMPLE 48

TABLE 18
GRADE POINT AVERAGE, CUMULATIVE, STUDY SAMPLE 49

TABLE 19
PERCENT OF TIME ABSENT, FRESHMAN AND SENIOR OR LAST YEAR, STUDY SAMPLE 51

TABLE 20
PERCENT OF TIME ABSENT, FRESHMAN AND SENIOR OR LAST YEAR, STUDY SAMPLE 54

TABLE 21
GRADUATION STATUS AND PERCENT ACQUIRING SOME POST-SECONDARY EDUCATION 56

TABLE 22
POST-SECONDARY EDUCATION - BY SEX AND ETHNIC ORIGIN 61

TABLE 23
TYPE OF POST-SECONDARY EDUCATION, BY SEX 63

TABLE 24
TYPE OF POST-SECONDARY EDUCATION, BY ETHNIC ORIGIN 64

TABLE 25
NUMBER AND PERCENT CURRENTLY REGISTERED TO VOTE - BY SEX, ETHNIC ORIGIN AND CURRICULUM 66

Page

TABLE 26
MAIN SOURCE OF SKILLS, FIRST JOB SINCE LEAVING HIGH SCHOOL - BY SEX 71

TABLE 27
MAIN SOURCE OF SKILLS. LAST JOB SINCE LEAVING HIGH SCHOOL - BY SEX 72

TABLE 28
MAIN SOURCE OF SKILLS, FIRST JOB SINCE LEAVING HIGH HIGH SCHOOL--BY ETHNIC ORIGIN 74

TABLE 29
MAIN SOURCE OF SKILLS, LAST JOB SINCE LEAVING HIGH SCHOOL--BY ETHNIC ORIGIN 75

TABLE 30
JOB EXPERIENCE ATTITUDES AFTER LEAVING HIGH SCHOOL 77

TABLE 31
RELATIONSHIP OF FIRST AND LAST JOB SINCE LEAVING HIGH SCHOOL TO HIGH SCHOOL CURRICULUM - BY SEX 82

TABLE 32
RELATIONSHIP OF FIRST AND LAST JOB SINCE LEAVING HIGH SCHOOL TO HIGH SCHOOL CURRICULUM - BY ETHNIC ORIGIN 84

TABLE 33
RELATIONSHIP OF FIRST AND LAST JOB SINCE LEAVING HIGH SCHOOL TO OVERALL CAREER INTERESTS - BY SEX 87

TABLE 34
RELATIONSHIP OF FIRST AND LAST JOB SINCE LEAVING HIGH SCHOOL TO OVERALL CAREER INTERESTS - BY ETHNIC ORIGIN 89

TABLE 35
TOTAL MONTHS OF EMPLOYMENT WHILE ATTENDING HIGH SCHOOL, STUDY SAMPLE 94

TABLE 36
TOTAL NUMBER OF MONTHS EMPLOYED WHILE ATTENDING HIGH SCHOOL 98

TABLE 37
TOTAL NUMBER OF MONTHS EMPLOYED WHILE A SENIOR IN HIGH SCHOOL, STUDY SAMPLE 99

Page

TABLE 38
AVERAGE HOURS WORKED PER WEEK ON ALL JOBS HELD WHILE IN HIGH SCHOOL 100

TABLE 39
AVERAGE HOURLY WAGE RATE: ALL JOBS WHILE ATTENDING HIGH SCHOOL, STUDY SAMPLE 101

TABLE 40
AVERAGE HOURLY WAGE RATE: ALL JOBS WHILE ATTENDING HIGH SCHOOL 103

TABLE 41
JOB AND INDUSTRY OF EMPLOYMENT EXPERIENCE DURING SENIOR YEAR IN HIGH SCHOOL 104

TABLE 42
CIVILIAN LABOR FORCE PARTICIPATION RATES OF THE STUDY SAMPLE SINCE LEAVING HIGH SCHOOL, BY COHORT, SEX AND ETHNIC ORIGIN 106

TABLE 43
TOTAL MONTHS EMPLOYED SINCE LEAVING HIGH SCHOOL, STUDY SAMPLE 108

TABLE 44
TOTAL MONTHS UNEMPLOYED SINCE LEAVING HIGH SCHOOL, STUDY SAMPLE 109

TABLE 45
MONTHS ELAPSED BETWEEN LEAVING HIGH SCHOOL AND ACQUIRING FIRST JOB LASTING ONE MONTH OR LONGER, STUDY SAMPLE 110

TABLE 46
TOTAL MONTHS EMPLOYED AFTER HIGH SCHOOL, FIRST JOB, STUDY SAMPLE 112

TABLE 47
TOTAL MONTHS EMPLOYED AFTER HIGH SCHOOL, LAST JOB, STUDY SAMPLE 113

TABLE 48
TOTAL MONTHS EMPLOYED AFTER HIGH SCHOOL, LONGEST JOB, STUDY SAMPLE 114

Page

TABLE 49
HOURLY RATE OF PAY AFTER HIGH SCHOOL, FIRST JOB, STUDY SAMPLE 115

TABLE 50
HOURLY RATE OF PAY AFTER HIGH SCHOOL, LAST JOB, STUDY SAMPLE 116

TABLE 51
HOURLY RATE OF PAY AFTER HIGH SCHOOL, LONGEST JOB, STUDY SAMPLE 117

TABLE 52
IMPACT OF HIGH SCHOOL CURRICULA ON SENIOR GRADE POINT AVERAGE EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE 131

TABLE 53
IMPACT OF HIGH SCHOOL CURRICULA ON PERCENT OF DAYS ABSENT DURING SENIOR YEAR EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE 135

TABLE 54
EFFECT OF CURRICULUM STRUCTURE ON GRADE POINT AVERAGE IN SENIOR OR LAST YEAR IN SCHOOL AND PERCENT OF TOTAL DAYS ABSENT 138

TABLE 55
IMPACT OF HIGH SCHOOL CURRICULA ON PERCENT GRADUATING, EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE 144

TABLE 56
ANALYSIS OF THE EFFECT OF CURRICULUM STRUCTURE ON THE PROBABILITY OF HIGH SCHOOL GRADUATION 147

TABLE 57
IMPACT OF HIGH SCHOOL CURRICULA ON PERCENT OF STUDENTS ACQUIRING SOME POST-SECONDARY EDUCATION, EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE 150

TABLE 58
ANALYSIS OF THE EFFECT OF CURRICULUM STRUCTURE ON THE PROBABILITY OF ACQUIRING SOME POST-SECONDARY EDUCATION AFTER LEAVING HIGH SCHOOL 153

Page

TABLE 59
IMPACT OF HIGH SCHOOL CURRICULA ON PERCENT REGISTERED TO VOTE, EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE 155

TABLE 60
ANALYSIS OF COOPERATIVE VOCATIONAL EDUCATION ON VOTER REGISTRATION BEHAVIOR 156

TABLE 61
IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, TOTAL MONTHS ELAPSED BETWEEN LEAVING HIGH SCHOOL AND ACQUIRING ONE'S FIRST JOB 171

TABLE 62
EFFECT OF CURRICULUM STRUCTURE ON MONTHS ELAPSED BETWEEN LEAVING HIGH SCHOOL AND ACQUIRING FIRST JOB LASTING ONE MONTH OR LONGER 173

TABLE 63
IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, TOTAL MONTHS EMPLOYED ON THE FIRST JOB SINCE LEAVING HIGH SCHOOL 178

TABLE 64
EFFECT OF CURRICULUM STRUCTURE ON TOTAL MONTHS EMPLOYED, FIRST JOB AFTER LEAVING HIGH SCHOOL 181

TABLE 65
IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, TOTAL MONTHS EMPLOYED ON THE LAST JOB SINCE LEAVING HIGH SCHOOL 185

TABLE 66
EFFECT OF CURRICULUM STRUCTURE ON TOTAL MONTHS EMPLOYED, LAST JOB AFTER LEAVING HIGH SCHOOL 188

TABLE 67
IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, PERCENT OF TIME EMPLOYED SINCE LEAVING HIGH SCHOOL 193

TABLE 68
EFFECT OF CURRICULUM STRUCTURE ON PERCENT OF TIME UNEMPLOYED 195

Page

TABLE 69
IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, AVERAGE HOURLY WAGE RATE ON FIRST JOB SINCE LEAVING HIGH SCHOOL 199

TABLE 70
ANALYSIS OF CURRICULUM STRUCTURE, AVERAGE HOURLY WAGE RATE, FIRST JOB AFTER LEAVING HIGH SCHOOL 202

TABLE 71
IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, AVERAGE HOURLY WAGE RATE ON LAST JOB SINCE LEAVING HIGH SCHOOL 205

TABLE 72
ANALYSIS OF CURRICULUM STRUCTURE, AVERAGE HOURLY WAGE RATE, LAST JOB AFTER LEAVING HIGH SCHOOL 208

TABLE 73
IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, AVERAGE MONTHLY EARNINGS OF FIRST JOB SINCE LEAVING HIGH SCHOOL 211

TABLE 74
ANALYSIS OF CURRICULUM STRUCTURE, AVERAGE MONTHLY EARNINGS, FIRST JOB AFTER LEAVING HIGH SCHOOL 214

TABLE 75
IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, AVERAGE MONTHLY EARNINGS OF LAST JOB SINCE LEAVING HIGH SCHOOL 217

TABLE 76
ANALYSIS OF CURRICULUM STRUCTURE, AVERAGE MONTHLY EARNINGS, LAST JOB AFTER LEAVING HIGH SCHOOL 220

TABLE 77
CHARACTERISTICS OF COOPERATIVE AND NON-COOPERATIVE FIRMS IN DAYTON, OHIO 226

TABLE 78
LABOR FORCE AND POTENTIAL EMPLOYMENT OF COOPERATIVE AND NON-COOPERATIVE EMPLOYERS, SPRING, 1972 227

Page

TABLE 79
EFFECT OF DOWNTURN ON THE COOPERATIVE VOCATIONAL EDUCATION PROGRAM 230

TABLE 80
REACTIONS AND ATTITUDES OF EMPLOYERS NOT PRESENTLY IN COOPERATIVE PROGRAM 231

TABLE 81
TRAINING RECEIVED BY COOPERATIVE VOCATIONAL STUDENTS 234

TABLE 82
COOPERATIVE EMPLOYERS' EVALUATION OF THE COOPERATIVE VOCATIONAL PROGRAM 235

TABLE 82
TOTAL EXPENDITURES (CURRENT PLUS CAPITAL) AND AVERAGE DAILY ENROLLMENT, PATTERSON COOPERATIVE HIGH SCHOOL AND DAYTON COMPREHENSIVE HIGH SCHOOLS, 1959-60 TO 1969-70 240

CHAPTER 1

THE PROBLEM AND ISSUES

A. The Problem

The cooperative vocational education program is designed to serve an educational and training objective by means of an interdependent combination of vocational instruction and employment related to that instruction. It is career preparation. This program is one of many designed to aid high school students in their transition from school to work. In addition, its objective is to improve scholastic performance for both disadvantaged and non-disadvantaged students by improving the relevance between formal education and one's future or ultimate career. Other educational and manpower programs purport to achieve this objective, too, such as the JOB CORPS, the Neighborhood Youth Corps and the standard secondary vocational-technical programs. There is some evidence as to how well and in what ways these programs affect the behavior and careers of young persons and disadvantaged persons, but there is no sound evidence of the impact of the cooperative vocational education program on the labor market and educational performance of high school students. Also, the program is comparatively small in numbers of students, and there is little information on the degree to which this particular program could be expanded and generalized across the educational and industrial face of the economy. This study therefore seeks to perform an economic and institutional analysis of the program to determine the degree to which it improves scholastic performance and the degree to which it can be generalized among students and throughout the economy.

B. Objectives

The objectives of this study are based upon an understanding of the objectives and outputs of the program. The objective of the program is, fundamentally, career preparation. Career preparation and school-work transition outputs of the program are indicated as major program outputs. The program also produces a set of intermediate outputs. These are, in general, related to the educational process itself and are designed to increase the embodiment of human capital in the high school student by increasing the relevance of formal education to the student's ultimate career objective. Thus, the objective of the study is to answer the following (but not exhaustive) set of questions:

a) To what extent does the program aid in the transition from school to work?

b) To what extent does the program increase the relevance of formal schooling to one's ultimate career or occupational goal?

c) To what extent does the program have a comparative advantage in achieving a) and b) above for disadvantaged persons?

d) To what extent can the program be generalized for the overall population of high school students, such as students in the general curriculum?

e) What is the extent of demand among industries in the event that the program is significantly expanded?

f) To what extent does the program affect civic and social attitudes in a positive way?

g) To what extent is a student's immediate employability affected by the program?

h) To what extent is a student's future education and employability and earnings affected by the program?

These questions embody the hypotheses to be tested.

C. The Study Base

This case study investigates the economic impact of a cooperative vocational education program in Dayton, Ohio. It analyzes the post-secondary labor market and educational performance of a 25 percent sample of the 1966 and 1970 graduation cohort of the comprehensive high schools of that city, comprising about 4,000 students, and the entire population of the 1966 and 1970 graduation cohort of over 800 students of Patterson High School, which operates the cooperative vocational program. In addition, the study includes analysis based on responses to a random sample of fifty employers who are currently participating in the cooperative program as well as a sample of fifty non-participating employers. The first sample was selected with probability of selection proportional to the number of cooperative vocational students they had hired. The second group was selected with probability of selection proportional to size of the firm's labor force at its Dayton labor market establishment.

D. Measures of Impact

As suggested above, any educational activity is likely to have several impacts since the products of education are multiple in nature. Education is at once an investment designed to yield a future return in terms of increased earnings and employment stability, and it is also a consumption good which yields immediate benefits. The degree to which these outputs are proportionally represented depends on the particular type of educational activity. In addition, the outputs of education can be thought of as representing different stages in the production-consumption process. Part of education is a final product. Clearly, the consumption aspect is a final good. More intermediate in nature is the increment to human capital which results directly in enjoyments. Finally, some attributes of the educational process are mainly intermediate products, for they enable the human agent to create or gain access to further opportunities to invest in human capital. Thus, non-cooperative secondary education may create relatively more intermediate output in its product mix than does cooperative vocational education since a major intent of the former is to prepare one for further formal educational investment whereas the latter is less so designed. However, cooperative vocational education may provide relatively more access to different quantities or qualities of on-the-job training which serve as a substitute for as well as a complement to formal education. In short, the product mixes of the cooperative vocational and non-cooperative curricula are not the same.[1]

This fact is further borne out in that the populations of students who enroll in the two types of programs are not from the same populations. Clearly, each group of students must place different relative weights on the value of status, income, on-the-job amenities, security, and the prospect of acquiring future education. Since such is the case, no comparison of the two groups on the basis of any single index or set of indices of performance can adequately reflect the value of the educational output of the program for each of the two groups of students. Since we do not yet know the relative weights which the two groups of students place on the different program outputs, all the estimates of net benefit in this study, whether they be such indices as wage rates, earnings, or employment or probabilities of college attendance, are inherently subject to error. This fact will always be the case in the absence of a true experimental design.

E. Survey of the Literature on Evaluation of Cooperative Vocational Education: Methodological Issues

Some insight into the issues and problems to be faced in a study of this sort can be gained by analysis of previous research efforts in the field. In particular, it is of interest to set forth the findings of previous studies to serve as a basis of comparison for the results of the present analysis.

---

[1] Throughout this study the non-cooperative curricula refer to the curricula of the comprehensive high school -- academic, general and vocational.

Unfortunately, the literature which reports evaluations of the educational and economic effects of high school cooperative vocational education programs is sparse and imperfect. Sixteen such studies directly bear on the problems of this study, and nine other studies are tangential to the issues and analyses raised here.

The earliest study, by Dillon, encompasses employment problems of high school youth under war-time conditions during World War II in eleven cities which had true cooperative education programs "in which guidance and supervision were provided by school personnel"--Philadelphia, Tulsa, Orange (Texas), Los Angeles, Oakland, San Francisco, Sacramento, Detroit, Grosse Pointe (Michigan), Minneapolis, and Torrington (Connecticut).2/ One other relatively early study was by Margaret E. Andrews, whose population was the 320 June, 1950, cooperative student graduates of the Minneapolis high schools.3/ The remaining fourteen studies all fall within the years 1963 to 1970. They include case studies ranging from small local, to large local, to state-wide, to a sampling over four states. Nine of the fourteen deal with single cities.

Statistical techniques used to analyze the data include correlation, various tests of significance, and analysis of covariance. Martin Hamburger used correlations between selected socio-economic status variables and the dependent variables being studied and ran t-tests of significant differences between cooperative and control groups.4/ Gerald Benjamin tested twenty hypotheses by correlation and found only two significant.5/ Edward T. Ferguson's design included one-way classification

---

2/ Harold J. Dillon, Work Experience in Secondary Education, New York: National Child Labor Committee, 1946, p. 9.

3/ Margaret E. Andrews, "Cooperative Work Students," The Journal of Business Education, May 1954.

4/ Martin Hamburger, Report of the Evaluation Study of the Municipal Cooperative Education Program, New York: New York City Department of Personnel, April 1965, pp. 5 and 11 ff.

5/ Gerald R. Benjamin, Significant Job Success Factors Found in Work-Study Programs in Five Major New York State Cities, Final Report, New York State Education Department, Division of Special Education and Rehabilitation, July 1967.

analyses of covariance to adjust for initial differences in age, sex, socio-economic status, prior achievement, and teacher attitude.[6] He used simple correlation and t-tests. In Leonard F. Robertson's study, "Statistical tests of significance to which the data were subjected, where appropriate, were t-tests, chi-square tests, and rank tests."[7] In David C. Tuttle's study, "Four items on the graduate and four items on the employer interview schedules were statistically compared by the t-test."[8] James A. Zancanella ran tests of significance on a number of variables between experimental and control groups at the .05 level of statistical significance.[9]

The extant studies run the gamut from studies with no control group or comparison group at all[10] to studies which do have some type of comparison group. No studies have a true experimental design. As with the current study, the best the more carefully conceived studies could do was offer a random sample of the rest of the student body as a comparison group and warn the reader that the two groups were not from the same population.[11] Unfortunately, studies often used before-after comparisons in lieu of a comparison group.

---

[6] Edward T. Ferguson, A Comparison of the Effectiveness of the Project and Cooperative Methods of Instruction on Selected Competencies in Distributive Education at the Secondary Level, Research Report No. 4, Department of Secondary Education and Curriculum, College of Education, Michigan State University, East Lansing, Michigan, April, 1968, pp. 5-6.

[7] Leonard F. Robertson, An Exploratory Study of the Effect of Cooperative Education Programs in Beginning Occupations on Selected Employment Factors, Doctoral Study, Colorado State College, 1968.

[8] David C. Tuttle, A Follow-up Study of Graduates' and Employers' Opinions of a Cooperative Training Program, Doctoral Study, Colorado State College, 1965.

[9] James A. Zancanella, An Exploratory Study of the Effect of the Secondary School Cooperative Part-Time Training Program in the Distributive Occupations on Selected Employment Factors, Doctoral Study, Colorado State College, 1965.

[10] Andrews, op. cit.

[11] Lewis D. Holloway, An In Depth Study of the Cooperative Vocational Education Program, Champaign Central High School, Champaign, Illinois, Unpublished Ph.D. Dissertation, University of Illinois, Champaign, Illinois, 1967.

The studies vary widely in their awareness of the problem of self-selection bias. Given this bias, the studies also vary widely in their attempts to control for it. Matched pair techniques are used but often multiple regression analysis or related analysis of variance techniques are not used even when joint distributions on relevant socio-demographic variables are collected so that one could control for major differences among sample groups.

In short, the studies show a vast variation in awareness of appropriate social science methodology with respect to both sample design and testing of models of behavior. They vary so widely in methodological terms that it is impossible to reduce the studies to a common basis so that their results may be compared. Therefore, it should not be too surprising that a wide variety of program impacts (and lack of impact) was discovered.

In conclusion, while several of these studies do display a degree of methodological sophistication, there is no new startling approach to the major problems faced by the current study,--namely the problem of achieveing a statistically sound control group and the problem of non-response bias. With an awareness of these problems in mind, we turn to some of the results.

F. Survey of Measures of Educational Effect

Achievement Tests. Hamburger found a significantly greater increase in I.Q. and in clerical skills for cooperative students than for control students over the year studied.12/ Ferguson found a significant difference in achievement on sales comprehension tests in favor of cooperative students over project method students but no significant difference on the test of economic comprehension. He found that various background factors made no significant difference in the effects of the cooperative and project methods as measured by standardized tests: prior achievement, socio-economic status, age, sex, and teacher attitude.13/

Grades. Grades are the most widely reported measure of educational effect. Dillon found cooperative work experience to have usually a neutral or favorable effect upon students' grades.14/ J.J. DePianta

---

12/ Hamburger, op. cit., p. 10-13.

13/ Ferguson, op. cit.

14/ Dillon, op. cit., pp. 17 and 62-66.

reported that grade point averages for senior year cooperative students rose to 2.2 from 1.7 in their junior year before entering the cooperative education program.[15] Robertson found that the students who had been in cooperative education and those who had not were similar in high school achievement.[16] Lester E. Sanders found no statistically significant difference between cooperative and vocational-technical students with respect to scholastic rank or grade point average.[17] Hamburger found a statistically significant difference in favor of the class marks of cooperative students.[18] Seth F. Wohl reported that cooperative students' grades averaged slightly higher than the grades of control students. Cooperative students' grades also improved during the high school years, while control grades declined slightly.[19] Zancanella found grades significantly different in the opposite direction--a grade point average of 1.82 for cooperative students and 2.30 for controls.[20] Haines and Coleman[21] and Haines and Ozzello[22] both reported cooperative students ranking above average in their graduating classes.

---

[15] J.J. DePianta, "Follow-up of a Work-Experience Program," Balance Sheet, May 1968.

[16] Robertson, op. cit.

[17] Lester E. Sanders, A Comparison of Two Methods of Preparing Youth for Employment: Cooperative Occupational Education Versus the Preparatory Vocational-Technical Education, Doctoral Study, University of Missouri, 1967.

[18] Hamburger, op. cit., p. 13.

[19] Seth F. Wohl, An Evaluation of the Municipal Cooperative Vocation Program of the High Schools of the City of New York, Brooklyn: New York City Board of Education, June 1968.

[20] Zancanella, op. cit.

[21] Peter G. Haines and Brendan G. Coleman, "How High School Cooperative Trainees Fare in the Labor Market," National Business Education Quarterly, Fall, 1964.

[22] Peter G. Haines and Lawrence M. Ozzello, How High School Cooperative Trainees Fare in the Labor Market. Phase C, A Follow-up Study of 1964 Graduates Ten Months After Graduation, East Lansing: Michigan State University, College of Education, August 1966.

Attendance. Dillon found that cooperative programs had at least a slightly favorable effect upon attendance and tardiness.[23] DePianta reported substantial reductions in absence for cooperative students. Hamburger showed cooperative students improving and control students becoming slightly worse in attendance in the course of their high school years; the difference between the groups was significant at the .01 level.[24] Wohl found similar trends; by the twelfth year cooperative student absences averaged 11.5, and control group absences 20.4. Lateness remained about the same for control students but declined more than 50 percent among cooperative students.[25]

Robertson reported that cooperative and control students were similar in numbers of high school courses taken.[26] Zancanella found the mean number of credits earned greater for control than for the cooperative group. The difference was not statistically significant, however.[27]

Student replies revealed to Dillon that many cooperative students were held in school by the cooperative program; students said they would have dropped out without it. The pay students received on their cooperative jobs was a factor helping to hold them in school.[28] Hamburger reported graduation rates higher for cooperative students than for controls.[29] Concerning students who had failed to graduate on schedule, Wohl found that more cooperative than control students finished during summer school or by the following January.[30]

Post-Secondary Education. Dillon generalized that participation in work experience made many students realize a need for further education.[31]

---

[23] DePianta, *op. cit.*

[24] Hamburger, *op. cit.*, pp. 13-14.

[25] Wohl, *op. cit.*, p. 40.

[26] Robertson, *op. cit.*

[27] Zancanella, *op. cit.*

[28] Dillon, *op. cit.*, pp. 17-18, 67-68 and 90.

[29] Hamburger, *op. cit.*, pp. 20-21.

[30] Wohl, *op. cit.*, p. 39.

[31] Dillon, *op. cit.*, pp. 69-90.

Andrews' sample of 295 cooperative graduates included 27 who had plans for further education.[32] Four out of DePianta's 13 students did continue their education beyond high school.[33] Sanders found that more than 60 percent of both cooperative and vocational-technical graduates continued training or education beyond high school, 28 percent in four-year colleges. A larger percentage of vocational-technical than cooperative graduates obtained post-secondary education or training in occupations related to their high school training.[34] Wohl found that 45 out of 189 graduates responding to his study continued education in a large variety of schools.[35] Zancanella reported that 2 of the 58 cooperative students and 12 of the 86 control students planned additional education.[36] Haines and Coleman found that about one fifth of cooperative graduates continuing in school or college by field of specialization: 32 percent of office trainees (15 percent full-time), 40 percent of distributive education trainees (13 percent full-time), 45 percent of trade and industrial trainees (21 percent full-time).[38]

G. Survey of Measures of Economic Effect

Wages. Dillon found that going wages had been paid cooperative students; there was no problem of sub-standard wages in the era of war-time demand.[39] According to Sanders' study, cooperative students earned about 44¢ an hour less on their supervised jobs than did vocational-technical students on their unsupervised jobs. Many employers looked upon cooperative programs as a source of low cost, part-time workers who could be assigned routine tasks.[40] Slightly more than half of Hamburger's cooperative students held white collar jobs, and the rest blue collar. It was difficult to break the vicious circle and get disadvantaged youth into the better jobs; better qualified youth from other schools tended to be chosen for the better jobs.41/

---

[32] Andrews, *op*. *cit*.

[33] DePianta, *op*. *cit*.

[34] Sanders, *op*. *cit*.

[35] Wohl, *op*. *cit*., p. 111.

[36] Zancanella, *op*. *cit*.

[37] Haines and Coleman, *op*. *cit*.

[38] Haines and Ozzello, *op*. *cit*.

[39] Dillon, *op*. *cit*., p. 73.

[40] Sanders, *op*. *cit*.

Employment. Difference in speed of getting first job was the only statistically significant difference Robertson found between cooperative and control graduates; 58.8 percent of cooperative graduates and 34.3 percent of controls began work immediately after graduation.42/ Benjamin reported that 69 percent of cooperative graduates had jobs within thirty days.43/ Haines and Ozzello reported that 60 percent of the cooperative graduates available for work obtained full-time employment within a month after graduation.44/ Sanders discovered that a larger percentage of cooperative graduates obtained their first full-time jobs in occupations for which they had trained, or closely related ones, but that a larger percentage of vocational-technical graduates was currently working on the same or closely related occupations. The majority of both groups, however, did not enter the occupations for which they trained. Cooperative graduates tend to work progressively toward clerical, service, and sales occupations, whereas vocational-technical graduates work toward skilled and semi-skilled occupations.45/ Wohl's responses from 189 1964 cooperative graduates nearly a year after graduation revealed 149 employed and 40 unemployed. Graduates' attitudes and plans showed upward mobility from lower echelons of the work force into a variety of middle level business, administrative, and technical fields. Few expressed interest in blue collar work.46/ As for occupationel status, Benjamin found the Dictionary of Occupational Titles classification of graduates' jobs to be positively correlated with their grade point averages. He also found assignment to work-study job stations related to students' major fields to be positively correlated with the proportion of their time employed after graduation. In other words, proper coordination of work and study programs had a favorable effect upon subsequent

---

41/ Hamburger, op. cit., p. 8.

42/ Robertson, op. cit.

43/ Benjamin, op. cit.

44/ Haines and Ozzello, op. cit.

45/ Sanders, op. cit.

46/ Wohl, op. cit., pp. 107 and 128-29.

volume of employment.[47] Zancanella found no significant differences between cooperative graduates and controls in types of employment or in functions. There was, however, a significant difference in plans; a majority of the cooperative graduates planned to continue in a distributive occupation. As for first jobs, 24 out of the 58 cooperative graduates remained, following graduation, in the same positions they had held in the cooperative program.[48] Of the 2,957 Michigan cooperative education graduates tabulated by Haines and Ozzello ten months after graduation, 62 percent were employed fulltime, 13 percent were employed part time (and mostly either married or attending school or college), 2 percent were in military service, 15 percent were in school or college full time, 7 percent were housewives, and 1 percent were unemployed. Of the 29 unemployed, 21 were just moving or changing jobs; only eight had been looking for work for a period of time. In March, 1965, the average unemployment rate for 18- and 19-year-olds in Michigan was about 7 percent.[49]

Earnings. As for earnings, Robertson found current average weekly gross earnings at $86 for cooperative graduates and about $82 for controls; the difference was not significant.[50] Sanders reported vocational-technical graduates to be earning higher average current salaries than cooperative graduates.[51] Zancanella found no significant difference in average earnings between cooperative and control graduates.[52]

Job Performance. Robertson reported no significant difference between cooperative and control graduates' job performance as indicated by mean scores on companies' rating scales.[53] In Sanders' survey current employers gave higher ratings to cooperative than to vocational-technical graduates on personal characteristics, work habits, and overall competencies.[54] Benjamin found success on the job positively related to placement in jobs for which graduates had received specific training.[55] Zancanella reported no significant difference between cooperative and control graduates in mean scores on a job performance rating scale.[56]

---

[47] Benjamin, *op*. *cit*.

[48] Zancanella, *op*. *cit*.

[49] Haines and Ozzello, *op*. *cit*.

[50] Robertson, *op*. *cit*.

[51] Sanders, *op*. *cit*.

[52] Zancanella, *op*.*cit*.

[53] Robertson, *op*. *cit*.

[54] Sanders, *op*. *cit*.

Job Satisfaction. Robertson found no significant difference between cooperative and control graduates on his Job Satisfaction Scale.[57] Zancanella found no significant difference between cooperative and control students in mean scores on a job satisfaction questionnaire.[58]

Summary. The effects of cooperative vocational education differ considerably according to the merits of particular programs and the evaluation methodologies used. The statistical techniques are generally quite simple and, in general, there is absence of carefully thought out analytical models. The studies available are also all case studies from which it is difficult to generalize. In addition, the results of the case studies are hard to compare, especially when results are conflicting, due to the divergent methodologies used.

More importantly, as we will see in the present study, relationships which appear to be statistically significant (or not significant) when simple two-variable comparisons are made, are not significant (are significant) when, among comparison groups, differences in variables of interest such as earnings are standardized for various socio-demographic effects. Yet, many of the studies above fail to appreciate this fact.

Finally, we come to the most fundamental set of criticisms. The various methodologies used by the above authors to evaluate the cooperative program suffer from a number of conceptual flaws. The conceptual flaws stem from two sources. First it is often the case that the indices used have no clearcut objective nature. A case in point is the ubiquitous Job Satisfaction Scale. The development of such a scale can be a very arbitrary process and it is never clear what relative weights one should attach to each component of the scale. The conceptual meaning and interpretation of such scales is not unambiguous. For instance, the scales are ordinal and not cardinal. They can only indicate that a value may be higher or lower but not by how much. Second, the use of such scales involves making interpersonal comparisons of utility, a practice whose validity is unresolvable. But a second and more serious flaw stems from the fact that very simple indices are being used to describe a very complex multi-stage, multiple product educational investment process which is organic in nature. Thus, for instance, a case study will use average weekly earnings based upon a one-shot cross-section data set to make what are essentially long run efficiency judgments about a program. There is often no awareness that it is the time-earnings profile which should be considered and that it is the present value of such an earnings profile which is of importance. Even with this complexity, earnings remain only one aspect of the totality of economic effect. The same is true of costs. Any given educational strategy implies a continuing though changing pattern of formal, informal and on-the-job learning over one's working life. More than one educational investment function may be involved! This entire cost pattern, composed of both monetary and non-monetary costs, should be considered. However, these studies seldom express awareness of this fact.

---

[55] Benjamin, op. cit.

[56] Zancanella, op. cit.

[57] Robertson, op. cit.

[58] Zancanella, op. cit.

And, finally, a fundamental point related to the paragraph above is the problem of specifying an educational production function for a given program, either explicitly or implicitly, so one has an hypothesis as to how the program achieves the outputs it is said to achieve. It is very difficult to perform a convincing analysis of a program if one cannot specify the mechanism whereby the program achieves its objectives. This is, of course, a difficult and complex problem when one is dealing with a multiple product investment process whose final as well as intermediate outputs are realized over time. It has not been done successfully yet. We do not, of course, claim to have the answer to these most difficult problems. In this present study we cannot do much more than make one aware of the problems and to point out how incomplete the previous studies are and how inadequate, for similar reasons, the present study also is. But what is needed as the next step in this type of analytical effort is a dynamic simultaneous equation model which will describe the various stages of the investment and output process of a given educational strategy. What the present study and the analysis above can offer to this more complete approach is some ideas and clues as to how such a model should be specified.

H. Issues with the Present Study

Self-Selection Bias.[59] Apart from the problem described immediately above which the present study study shares with past research, a major problem which the studies above fail to face squarely is self-selection bias. That is, as indicated above, the students from the cooperative program come from a statistically different population than do the students enrolled in the comprehensive high schools. Thus, there is no true control group in this "natural" experiment--only comparison groups.

---

[59] The term "bias" means that the estimated results based on the study sample diverge from the true behavior of the population of students as a whole.

Students are selected into or select themselves into a given program for very sound reasons which are a function of their values, motivations and perceived needs. This self-selection bias becomes an endogenous variable of the educational process. Its effect must be accounted for in any analysis of the relative outputs of the two competing (and yet complementary) educational processes. It is possible to partially control for this phenomenon by including as variables in the analysis those criteria which serve to guide selection into the program.

Selection bias comes from two sources. First, counselors at Patterson High School generally had more applicants than available slots and thus tended to select the most promising students from among those applying throughout the city's primary schools. Selection was made on the basis of scholastic performance, letters of recommendation and the counselors' own evaluations of the students through personal interviews. Next, of course, the students selected themselves into the program on the basis of their own personal interests and educational and occupational goals.

A student's ethnic origin, sex, level of achievement and socio-economic status are major variables which influence self-selection into the cooperative program. These variables are generally included in the analysis to follow. Ethnic origin, however, is presently less significant as a determinant of entrance into the cooperative program since Patterson now selects students proportionately from all primary schools in the Dayton school system.

Problems of Non-Response. The final major methodological problem of this study is non-response bias. While we take a step towards solving this problem in the present study, we by no means overcome it.

Since this study was conducted by means of a mail questionnaire, the samples of students and employers contain non-response bias. Four separate mailings at approximately two-week intervals were used to sample the student body. The fourth mailing utilized a shortened form of the mail questionnaire in an effort to increase sample response. The remaining non-respondents were then randomly sampled and this sample interviewed in an effort to gain information on the non-respondents. It required 357 observations to acquire an interview sample of 106 non-respondents. In the present analysis, this non-respondent sample is included with the mail respondents in all regression analyses. (The combined group is known as the "study sample.") A dummy variable is then used to test whether, for each model estimated, the personal interview non-respondents included in that sample for that model are significantly different from the mail questionnaire respondents. Ideally, we do not want this variable to be statistically significant, thus arguing for no difference between the two samples.[60]

However, it is important to note that the test represents a test of differences only between the 30.1 percent of the sample answering the original mail questionnaire and the 29.7 percent who were contacted by the personal follow-up. About 40.7 percent of the original sample is not represented by this test. Since there is non-random non-response bias in both samples above, we cannot tell exactly how the basic characteristics of this combined sample compare with the original sample for all those variables not available from school records--this list of variables comprises all labor market and post-high school variables in the study. Chapter Two provides some indication of the pattern of bias, however, based on analyses of school records.

I. Summary and Plan of the Study

This case study attempts to assess the economic and educational impact of a cooperative vocational program on the 1966 and 1970 graduation cohorts in Patterson High School, Dayton, Ohio. The results of this economic and institutional analysis are intended to improve educational policy and provide insight into the ability of this educational alternative to improve the transition from school to work.

Previous studies of cooperative vocational education are poorly conceived and executed. Their naive methodologies and general non-comparability preclude any generalization from them.

The present study, too, is beset by methodological problems, namely, self-selection bias and non-response bias. Suggested methodologies used in this study partially overcome these two problems but serious problems remain. Finally, it, too, is a case study.

The plan of the remainder of the study is as follows: Chatper Two describes the basic structure of the sample and provides some insignt into the nature of the non-response bias. Chapter Three is a descriptive presentation of the main characteristics of the study sample. Chapter Four presents a descriptive analysis of the impact of cooperative vocational education on selected indices of educational performance while Chapter

---

[60] Damodar Gujarati, "Use of Dummy Variables in Testing for Equality between Sets of Coefficients in Two Linear Regressions: A Note," The American Statistician, February, 1970; and "Use of Dummy Variables in Testing for Equality between Sets of Coefficients in Linear Regressions: A Generalization," The American Statistician, December, 1970.

Five does the same for program impact on labor market performance. Chapter Six comprises an analysis of the program's impact on several indices of educational performance. Regression models are employed here. Likewise regression models are used to analyze the impact of the cooperative program on selected labor market outcomes in Chapter Seven. Chapter Eight describes the institutional response of employers to the vocational cooperative program while Chapter Nine analyzes the relative costs of the cooperative and non-cooperative high school programs. Chapter Ten presents a study summary.

CHAPTER 2

DESCRIPTION OF THE STUDY SAMPLE

A. Introduction

This chapter is divided into three sections. In the first section, we briefly describe the basic structure of the original mail sample. In the course of this description we examine some relevant response rates and then, on the basis of available data, attempt to determine the nature and extent of the non-response bias implicit in the study. As outlined in Chapter 1, the original sample can be divided into two groups: "respondents," i.e., those students who responded to one of the two forms of the mail questionnaire or from whom we obtained a personal interview, and "non-respondents," or students with whom we failed to make any contact. Since we have school transcripts on both sets of students, we can obtain some idea as to the similarity of these two sets by examining their records. Unfortunately, we do not have comparative information with respect to post-high school experience or for any labor market experience during high school for the non-respondents. Clearly, to the extent that the respondent group is different from the non-respondent group, we must qualify any conclusions or policy implications drawn from this study. An examination of non-response bias, then, will help to indicate the degree to which such qualifications must be made.

In the second section, we undertake an explicit discussion of the study sample, which is the group of students with whom the bulk of this analysis is concerned. The study sample is comprised of those students who replied to our long form questionnaire or who responded to the personal interview. However, limited analysis is performed of the sample which includes respondents to both the long and short form questionnaire. (See Appendix G.)

Since the largest part of the study is concerned with the high school environment and the labor market environment both during and after high school, we feel that it is instructive, at the outset, to give the reader a notion of the home environments from which the students in the study sample come. Thus, the third section of this chapter discusses three proxy variables for the home environment and helps set the stage for Chapters Three through Five where we examine the educational and job experiences of the students in the study sample by means of a descriptive analysis.

The reader should be cautioned at this point to note that Chapters Two through Five are mainly meant to be a description of the study sample and of the gross effects of the cooperative program. They are not an analysis of net program impact. The method of analysis in these chapters is the statistical technique known as crosstabulation. This mode of analysis is relatively straightforward, but handles large numbers of independent variables only with difficulty. Due to this difficulty, we will only concentrate upon the mean values of variables in the next few chapters, ignoring tests of significance among these means for the most part. Thus, although conclusions and implications will not be drawn until the more parsimonious technique of multiple regression analysis is used in later chapters, the approach in Chapters Two through Five is intended to give the reader a grasp of some of the basic issues of this study.

B. The Original Mail Sample Group

Table 1 shows the make-up of the original mail sample group. In the total sample we had 813 cooperative students and 3983 non-cooperative students. As can be seen from Table 1, about 57 percent of the cooperative students in the original mail sample were in the 1966 graduation cohort (hereafter referred to as the 1966 cohort). Cooperative students comprise about 18 percent of the 1966 cohort and 15 percent of the 1970 cohort, which can be seen by examining the column percentages in Table 1.

Given the structure of the original mail sample, Table 2 details some of the relevant response rates to the mail questionnaire.[1] Overall, our total response rate was 30.1 percent. Response rates broken down by cohort and the cooperative/non-cooperative categories are also presented in Table 2. It is interesting to note that students in the 1970 cohort were more likely to respond to the questionnaires than were students in the 1966 cohort. One possible rationalization for this pattern is that the more recent cohort may have a fresher memory as to the reasons by which high school helped or hurt them in their adjustment to post-high school life and saw this study as a means by which to express those reasons.

We also note from Table 2 that cooperative students were more likely to respond to the questionnaire than were non-cooperative students. It may be that cooperative students found their education to be more relevant on the average than the non-cooperative group and hence were more favorably disposed to respond to the questionnaire. Or, they simply may have more esprit as a result of their identification with Patterson Cooperative High School.

---

[1] Recall that there are two different types of questionnaires being used in this study, long- and short-form questionnaires. While the response rates include respondents to both forms, the heart of the analysis is limited to respondents to the long-form questionnaire.

TABLE 1
STRUCTURE OF ORIGINAL MAIL SAMPLE GROUP[a]

	1966 Cohort	1970 Cohort	Total
Cooperative	462 56.8 18.4	351 43.2 15.3	813
Non-cooperative	2039 51.2 81.6	1943 48.8 84.7	3982
Total	250	2294	4795[b]

Notes: a/ The numbers in each cell are the cell size, the row percentage and the column percentage.

b/ There was one non-cooperative student for whom we did not ascertain cohort status. Thus, the total number in the original mail sample was 4796.

TABLE 2
RESPONSE RATES OF MAIL RESPONDENTS

	1966 Cohort	1970 Cohort	Total
Cooperative	157/461 34.1	169/351 48.1	326/812 40.1
Non-cooperative	460/2039 22.6	655/1943 33.7	1115/3982 28.0
Total	617/2500 24.7	824/2294 35.9	1441/4794 30.1

Perhaps the most fundamental question to be asked in relation to Table 2 is whether the respondent group is, on average, representative of the original mail sample. If so, then the conclusions to be drawn from this study are applicable to the student population in Dayton as a whole. If, however, we find that the respondents are not representative, then generalizing the conclusions and policy implications of this analysis to the student population will be much more difficult. Before we turn to an examination of the possibility of non-response bias in the study sample, however, we note in Table 3 the breakdown of academic, vocational, and total credits earned by the cooperative and non-cooperative subsets of the original mail sample. The fact that cooperative students earn more credits in each category supports the statement of Chapter 1 that we are, in fact, dealing with two different student populations. It is clear that students choose the two different concentrations because their tastes, preferences, abilities and goals differ.

The nature of the sex-specific non-response bias can be seen by a comparison of Tables 4 and 5. We observe from Table 4, for example, that 50.8 and 54.5 percent of the original non-cooperative and cooperative samples were, respectively, female. Table 5 shows, however, that of the mail respondents 53.4 and 57.4 percent of the non-cooperative and cooperative groups were, respectively, females. It is difficult to postulate as to the significance of this sex-specific non-response bias.

Bias in the personal follow-up sample is more pronounced, especially in the non-cooperative group where only 34.7 percent of the non-cooperative students were female. For the cooperative group, 49.1 percent of the non-respondents were female. Thus, there may be serious sex-specific non-response bias in the personal follow-up group. In view of this possibiliy we should note at this point that in the analyses of the study sample to follow, the personal sample is combined with those students who responded to the long form mail questionnaire. In the regression models in Chapters Six and Seven appropriate statistical tests are included to account for this combined sample.

The nature of the non-response bias becomes clearer with examination of Table 6. First, we notice that in every case the mail respondents in both the cooperative and non-cooperative categories earned higher grade-point averages than did their counterparts who failed to respond. Further, mail respondents, again in every case, earned higher grade averages than their counterparts who were contacted via personal interview. Finally, in nearly every case the personal interview group earned higher grades than did the non-respondent group. If we accept grade point average as a valid proxy for I.Q. or motivation or achievement drive, then we are forced to the conclusion that the study sample, on the whole,may be more intelligent or has greater motivation than the original population,

TABLE 3
ACADEMIC, VOCATIONAL, AND TOTAL CREDITS BASED ON PUPIL CUMULATIVE HIGH SCHOOL RECORD, TOTAL COOPERATIVE AND NON-COOPERATIVE HIGH SCHOOL SAMPLE[a]

		Cooperative	Non-cooperative
Academic Credits	m	10.27	9.51
	sd	(3.45)	(4.30)
	n	813	3983
Vocational Credits	m	6.33	2.38
	sd	(5.42)	(3.10)
	n	813	3983
Total Academic and Vocational Credits	m	16.60	11.88
	sd	(7.28)	(5.81)
	n	813	3983

Notes: m = cell mean
sd = cell standard deviation
n = number of observations in cell

TABLE 4
BREAKDOWN OF ORIGINAL MAIL SAMPLE BY SEX AND COHORT

	Total Sample			1966 Cohort			1970 Cohort		
	Coop-erative	Non-coop-erative	Total	Coop-erative	Non-coop-erative	Total	Coop-erative	Non-coop-erative	Total
Male	370	1960	2330	207	1022	1229	163	938	1101
	15.9	84.1	100.0	16.8	83.2	100.0	14.8	85.2	100.0
	45.5	49.2	48.6	44.8	50.1	49.1	46.4	48.3	48.0
Female	443	2023	2466	255	1017	1272	188	1005	1193
	18.0	82.0	100.0	20.0	80.0	100.0	15.8	84.2	100.0
	54.5	50.8	51.4	55.2	49.9	50.9	53.6	51.7	52.0
Total	813	3983	4796	462	2039	2501	351	1943	2294
	17.0	83.0	100.0	18.5	81.5	100.0	15.3	84.7	100.0
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Notes: The figures in each cell are the cell size, the row percent and the column percent.

TABLE 5

DISTRIBUTION OF RESPONSE/NON-RESPONSE SAMPLE - BY SEX[a]

	Personal Follow up		Mail Respondents		No Response	
	Cooperative	Noncooperative	Cooperative	Noncooperative	Cooperative	Noncooperative
Male	29	32	139	520	200	1408
	47.5	52.5	21.1	78.9	12.4	87.6
	50.9	65.3	42.6	46.6	46.7	49.9
Female	28	17	187	595	228	1411
	62.2	37.8	23.9	76.1	13.9	86.1
	49.1	34.7	57.4	53.4	53.3	50.1

[a] The members in each cell are the cell size, the row percentage, and the column percentage.

TABLE 6
EDUCATIONAL CHARACTERISTICS OF PERSONAL FOLLOW UP, MAIL RESPONDENTS, AND NO RESPONSE SAMPLES[a]

		Cooperative			Non-cooperative		
		Personal Follow-up	Mail Respondents	No Response	Personal Follow-up	Mail Respondents	No Response
Grade Point Average:							
Freshman Year	m	2.33	2.59	2.46	2.15	2.32	1.91
	sd	(0.62)	(0.64)	(0.64)	(0.81)	(0.83)	(0.79)
	n	57	326	428	49	1115	2819
Senior Year	m	2.35	2.54	2.25	2.26	2.46	1.93
	sd	(0.60)	(0.61)	(0.59)	(0.84)	(0.86)	(0.86)
	n	56	326	428	49	1115	2819
Cumulative	m	2.29	2.51	2.27	2.17	2.34	1.89
	sd	(0.40)	(0.53)	(0.49)	(0.79)	(0.76)	(0.73)
	n	56	326	428	49	1115	2818
Average Percent of Time Absent:							
Freshman Year	m	3.9	2.8	3.4	4.0	4.0	5.5
	sd	(4.1)	(3.1)	(3.6)	(4.1)	(4.3)	(4.8)
	n	52	296	369	45	1032	2436
Senior Year	m	3.9	3.1	4.1	5.5	5.9	7.6
	sd	(3.6)	(3.6)	(4.3)	(4.9)	(4.8)	(5.5)
	n	55	322	416	48	1078	2604

TABLE 6
Educational Characteristics of Personal Follow-up, Mail Respondents, and No Response Samples[a] (continued)

		Cooperative			Non-cooperative		
		Personal Follow-up	Mail Respondents	No Response	Personal Follow-up	Mail Respondents	No Response
Average Academic	m	18.63	17.82	15.42	13.63	14.12	10.97
and Vocational	sd	(23.61)	(2.61)	(4.39)	(4.17)	(5.84)	(5.58)
High School Credits	n	57	326	428	49	1115	2819

Notes: m = cell mean
sd = cell standard deviation
n = number of observations in cell

a bias which will have some impact upon the conclusions to be drawn from this study. One possibility is that the average level of performance of all groups will be higher. However, if the absolute differences among the various curricula are unchanged, then the bias is not too severe. This is so since we are mainly interested in differences in performance. An analogous pattern is suggested in an examination of absence rates for the mail respondents vis-a-vis non-respondents. For both the freshman and senior years, the mail respondents on the average were absent less often from school than were non-respondents, a pattern which holds in both the cooperative and non-cooperative groups. If we assume that the percent of time absent is representative of attitudes in general, it would appear that students in the study sample are somewhat more healthy or responsible (or both) than students excluded from the study sample by virtue of their non-response. Finally, we note that on the average, mail respondents earn more credits in the academic and vocational areas than do non-respondents.

Table 6, then, supports an hypothesis alluded to earlier: that more intelligent and more highly motivated students as well as students with better attitudes generally make up the response subset of the original sample. If such an hypothesis is actually true, then non-response bias exists in the study sample. We would expect the average performance of the respondents to be higher than the non-respondents. Unfortunately, the actual extent to which such bias distorts the study results cannot be determined on the basis of the available data. (See Appendix G.)

Since the purpose of the personal interview used in this study was to obtain a sample of the non-respondents, a comparison of data on mail respondents with data on students in the personal follow-up group should yield some information on bias inherent in the study sample. It is possible, of course, that students who responded affirmatively to requests for personal interviews are a non-random sample of the non-response group selected for these interviews. If this is the case, then the personal interview group represents a biased subset of the broader non-respondent group. Even though this is undoubtedly the case, we proceed with a comparison of the mail respondents with the personal follow-up group.

In terms of graduation rates, Table 7 shows that 100 percent of the cooperative students who responded to the personal interview request graduated from high school while about 99 percent of the cooperative students who responded through the mails graduated. The pattern is similar for non-cooperative students: about 94 percent non-cooperative students contacted via personal interview graduated versus 91.2 percent of mail respondents.

Table 7 also includes two variables which may be considered as proxies for environmental influences outside the high school, namely, the number

TABLE 7
SELECTED EDUCATIONAL CHARACTERISTICS
PERSONAL FOLLOW-UP/MAIL RESPONSE SAMPLE

		Personal Follow-up		Mail Respondents	
		Cooperative	Non-cooperative	Cooperative	Non-cooperative
Graduation Rate[a]:					
Did Not Graduate		0 0.0 0.0	3 100.0 6.3	4 4.3 1.3	88 95.7 8.8
Graduated		51 53.1 100.0	45 46.9 93.8	302 25.0 98.7	907 75.0 91.2
Average Number of School Years Completed by Father[b]	m	10.4	10.9	10.1	10.8
	sd	(2.2)	(2.4)	(3.4)	(3.9)
Average Per Capita Family Income: Senior High School Year[b]	m	2075	2179	2438	2843
	sd	(625)	(1035)	(1450)	(1930)

Notes: a/ The numbers in each cell are the cell size, the row percentage and the column percentage.

b/ m = cell mean; sd = cell standard deviation.

of years of school completed by the father and per capita family income during the senior year. Both variables are good predictors of educational attainment. We can see from this table that personal follow-up cooperative students came from families in which the father had a higher level of education than their mail respondent counterparts. A similar pattern holds for non-cooperative students. However, mail respondents generally came from wealthier families than did students contacted via personal interview.

The case for non-response bias, then, appears to be somewhat mixed. On the basis of grade point averages, absences, total credits, and per capita family income, there are noticable differences between mail respondents and students who did not respond to the mail questionnaires. However, graduation rates do not differ greatly and personal follow-up students (who, recall, are a subset of the non-response group) came from families in which the fathers had achieved average higher educational levels than the fathers of students in mail response group. The relevant, although unanswerable question is the extent to which each of these factors influenced the decision of whether or not to respond to the mail questionnaire. In the regression analysis to follow Chapter Five, the inclusion of the personal follow-up sample in the study sample will be specifically accounted for to test in each case whether or not this sample differs from the respondents to the mail questionnaire.

C. The Study Sample

The study sample is comprised of those students who responded either to our long-form questionnaire or to the personal interview. Students who replied to the short form questionnaire are not included in this group. Later, we will test the appropriateness of the assumption that respondents to the short-form questionnaire came from the same population as long-form respondents in addition to conducting limited analysis of the combined groups. This analysis is performed in Appendix G.

The broad characteristics of the study sample are summarized in Tables 8 and 9. As Table 8 shows, the study sample is composed of 360 cooperative students and 1057 non-cooperative students. Of the 360 cooperative students, 53.3 percent were members of the 1966 cohort and 46.7 percent were of the 1970 cohort.

The breakdown of the total cooperative and non-cooperative groups by sex, ethnic origin, and class cohort is further summarized in Table 8. For example, 26 of the cooperative subset of the study sample were members of the "Black and other" ethnic group, with the majority of these (80.8 percent) being from the 1970 cohort. Similarly, the non-cooperative subset is comprised of 790 whites and 252 black and other. Clearly, the two

TABLE 8
PERCENT OF STUDY SAMPLE IN 1966 AND 1970 CLASS COHORTS

	Cooperative			Non-cooperative		
	1966 Cohort %	n	1970 Cohort %	1966 Cohort %	n	1970 Cohort %
Total Sample	53.3	360	46.7	43.6	1057	56.4
Male	54.7	161	45.3	49.4	492	50.6
Female	52.3	199	47.7	38.6	565	61.4
Whites	56.2	333	43.8	46.2	790	53.8
Black & Others	19.2	26	80.8	36.5	252	63.5
White Males	58.1	148	41.9	51.0	394	49.0
Black & Other Males	16.7	12	83.3	43.8	89	56.2
White Females	54.6	185	45.4	41.4	396	58.6
Black & Other Females	21.4	14	78.6	32.5	163	67.5
1966 Cohort	100.0	192	---	100.0	461	---
1970 Cohort	---	168	100.0	---	596	100.0

Note: n = Total cell size on which percentages are based.

TABLE 9

BREAKDOWN OF STUDY SAMPLE BY SEX AND ETHNIC ORIGIN[a]

	Cooperative		Non-cooperative					
			Academic		General		Vocational	
	Male	Female	Male	Female	Male	Female	Male	Female
Ethnic Origin:								
Black & Other	12 (7.5)	14 (7.0)	21 (11.4)	40 (20.9)	28 (23.2)	60 (34.3)	37 (21.9)	58 (31.4)
White	148 (91.9)	185 (93.0)	162 (87.6)	151 (78.6)	92 (76.0)	112 (64.0)	127 (75.1)	125 (67.6)
Not Ascertained	1 (0.6)	0 (0.0)	2 (1.0)	1 (0.5)	1 (0.8)	3 (1.7)	5 (1.7)	2 (1.0)
Total	161 (100.0)	199 (100.0)	185 (100.0)	192 (100.0)	121 (100.0)	175 (100.0)	169 (100.0)	185 (100.0)

Notes: a/ The numbers in each cell are the cell size and column percentage.

groups differ on the basis of ethnic composition. Thus, this difference must be explicitly accounted for in the regression analyses to follow.

A more detailed examination of the sex-ethnic origin breakdown of the study sample is conducted in Table 9. In this table, we have subdivided the non-cooperative group into three curricula: one group is comprised of students who studied the academic curriculum, a second is comprised of "general" students, and the third is composed of students who primarily took vocational education courses but were not members of the Patterson cooperative group. Appendix F details the exact definitions of these curricula as used in the study.

As Table 9 shows, about 92 percent of the cooperative males in the study sample are white, and about 93 percent of the cooperative females are also white. Comparison of these figures with the other three curricula detailed in Table 9 show that whites generally make up a smaller percentage of the non-cooperative groups than they do of the cooperative group.

D. Environmental Factors, Study Sample

As a prelude to the lengthy discussion and analysis of the educational and labor market experiences of the students in the study sample, we consider some proxy variables for the home environment of the cooperative and non-cooperative students. Differences in the home backgrounds between these groups again stress the fact that the cooperative students come from a population with different characteristics than that from which the non-cooperative students come.

Years of Schooling Father Completed. One proxy for the home environment and educational values of the student groups under examination is the educational achievement of the father. This variable is highly correlated with the educational attainment of students. Table 10 summarizes this achievement. Generally, the fathers in the homes of cooperative students have a lower level of educational achievement than do the fathers of academic curriculum students and about the same level as general and vocational students fathers. As usual, we have broken down these groups by sex and ethnic origin, where we find a similar pattern.

Socio-Economic Status of Father's Job While Student is Attending High School. In the total study sample as well as in the various ways in which that sample was broken down, the socio-economic status of the father's job while the student is attending high school is consistently lower for cooperative students than it was for the non-cooperative groups. This variable, too, is highly correlated with a students ultimate educational attainment as well as his own ultimate socio-economic status.

TABLE 10
YEARS OF SCHOOLING FATHER COMPLETED, STUDY SAMPLE[a]

		Cooperative	Non-cooperative		
			Academic	General	Vocational
Total Study Sample	m	10.2	12.4	10.0	9.9
	sd	(3.2)	(3.8)	(3.8)	(3.4)
	n	351	362	273	324
Male	m	10.1	12.4	10.6	10.2
	sd	(3.4)	(3.8)	(3.7)	(3.3)
	n	158	178	113	153
Female	m	10.2	12.5	9.5	9.6
	sd	(3.1)	(3.8)	(3.9)	(3.5)
	n	193	184	160	171
Black & Other	m	9.6	10.8	9.3	9.5
	sd	(3.5)	(3.7)	(3.1)	(3.6)
	n	25	57	78	82
White	m	10.2	12.7	10.3	10.0
	sd	(3.2)	(3.7)	(4.1)	(3.3)
	n	325	304	194	241

Notes: a/ m = cell mean
sd = cell standard deviation
n = cell size

TABLE 11
SOCIO-ECONOMIC STATUS OF FATHER'S OCCUPATION WHILE STUDENT ATTENDED HIGH SCHOOL, STUDY SAMPLE

		Cooperative	Non-cooperative
Total Sample	m	35.2	40.4
	sd	(19.7)	(23.8)
	n	335	926
Males	m	34.8	42.2
	sd	(20.8)	(24.0)
	n	152	439
Females	m	35.5	38.7
	sd	(18.8)	(23.6)
	n	183	487
Whites	m	36.4	44.6
	sd	(19.6)	(23.6)
	n	310	728
Blacks & Others	m	18.4	24.7
	sd	(11.8)	(17.4)
	n	24	195
White Males	m	35.7	45.7
	sd	(20.9)	(23.6)
	n	140	364
Black & Other Males	m	22.0	24.2
	sd	(15.6)	(16.9)
	n	11	72
White Females	m	37.0	43.4
	sd	(18.5)	(23.5)
	n	170	364
Black & Other Females	m	15.4	25.0
	sd	(6.4)	(17.7)
	n	13	123

TABLE 11
Socio-economic Status of Father's Occupation
While Student Attended High School, Study Sample (continued)

		Cooperative	Non-cooperative
1966 Cohort	m	35.7	40.7
	sd	(19.5)	(23.8)
	n	180	415
1970 Cohort	m	34.6	40.1
	sd	(19.9)	(23.9)
	n	155	511

Notes: m = cell mean
sd = cell standard deviation
n = number of observations in cell

TABLE 12

PER CAPITA FAMILY INCOME DURING SENIOR YEAR, IN DOLLARS, STUDY SAMPLE[a]

		Cooperative	Non-cooperative		
			Academic	General	Vocational
Total	m	2368	3375	2447	2497
	sd	(1345)	(2061)	(1710)	(1696)
	n	283	312	220	271
Male	m	2616	3400	2497	2736
	sd	(1534)	(2016)	(1808)	(1965)
	n	141	162	100	134
Female	m	2121	3349	2405	2263
	sd	(1077)	(2115)	(1630)	(1351)
	n	142	150	120	137
Black & Other	m	1646	2045	1424	1572
	sd	(795)	(1388)	(1115)	(1139)
	n	21	49	64	61
White	m	2429	3634	2874	2763
	sd	(1366)	(2069)	(1740)	(1743)
	n	261	262	155	209

Notes: m = cell mean; sd = standard deviation of the cell mean; and,
n = cell size.

Per Capita Family Income, Senior Year. Family income is also an important independent variable. We find that per capita incomes of the families of students in the cooperative group consistently fall below that of the non-cooperative students who are enrolled in the academic curriculum. There is no striking pattern as between the cooperative students' per capita family income and that of students in the general and vocational curricula.

The Impact of "Other Environmental Factors." If we can accept the assumption that positive educational and employment atittudes are developed in the home or are at least positively related to the home environment, then analytical models which incorporate these proxies for environmental factors and educational values may help indicate the net extent to which the cooperative education program imparts benefits to its enrollees. For example, we argue that if the students enrolling in the cooperative program tend to be more ambitious than non-enrollees, then the gross data presented on program effects may overstate the net benefits to be gained from cooperative vocational education. However, given that cooperative students come from less educated, somewhat poorer working class homes, and given that attitudes are directly related to home environment, the discussion of this section tends to support the hypothesis that the positive educational benefits apparent in the data shown in the following chapters can be attributed to the cooperative education program.

E. Summary

The present chapter has set the stage for the analysis of the study sample which follows. We have to this point alerted the reader to some of the dangers inherent in this study, particularly the pervasive, yet elusive, existence of response bias and the problem that the two curriculum groups are drawn from different populations. It is with this understanding that we proceed.

CHAPTER 3

EDUCATIONAL IMPACT OF THE COOPERATIVE VOCATIONAL EDUCATION PROGRAM

A. Introduction

In the present chapter, our aims are threefold. First, we undertake a descriptive analysis of the educational performance of the cooperative students vis-a-vis the non-cooperative students. This section of the chapter is confined to a discussion of the students' high school years. Second, we describe the patterns of post-secondary education for both the cooperative and non-cooperative groups. Third, we undertake a short discussion of a non-economic index of educational benefit: voting behavior.

Since the purpose of this chapter is mainly a descriptive one, and since we utilize the method of crosstabulation, final conclusions and policy implications will not be drawn here. Rather, a full discussion of the study's results must await the regression analysis of later chapters. Given the statistical techniques used in this chapter, no attempts will be made to determine the statistical significance of the several variables examined in this chapter since the patterns of effect and significance will most likely be different from those in the regression models. Thus, standard deviations, though reported in the tables as is appropriate, will not be explicitly discussed in the text of this chapter. Ignoring tests of significance at this point will not prohibit the reader from grasping the major issues of this study.

B. Educational Characteristics of the Study Sample During High School: Cross Program Impacts

The high school educational characteristics of the study sample can be utilized in several ways. First, the data pertaining to the freshman year of the cooperative group describes this group prior to or at the beginning of the cooperative education program--before program effects can manifest themselves. Thus, these data help describe the degree to which the two populations are the same. Second, data relevant to the cooperative group which is cumulative over the high school years, like grade point averages or total credits in vocational education courses, begin to give us a feeling as to the gross effects of the program. These gross impacts are certainly reflected in data pertaining to the senior year. Third, the non-cooperative subset of the study sample provides some basis for comparison, although as noted in Chapter One, the comparisons only give us a general notion of the impacts of cooperative education since the non-cooperative group is not, in the strictest sense, a control group.

Credits Earned in High School. We begin the gross examination of the educational impact of the cooperative education program relative to the educational performance of non-cooperative students with Table 13. Table 13 shows the mean number of academic credits (credits like English, mathematics, history, etc.) and of vocational credits (credits in courses like typing, shop, etc.) broken down by the cooperative and non-cooperative groups. On the average, non-cooperative students earn more credits in academic course areas than do cooperative students--11.55 versus 10.96 --but as one would expect, cooperative students tend to take more than twice as many vocational credits as compared with their non-cooperative classmates. When we break down the cooperative and non-cooperative subsets of the study sample by sex, ethnic origin and class cohort, as is also done in Table 13, we find that similar patterns hold. We find, for example, that white cooperative students take fewer academic credits and more vocational credits than their non-cooperative counterparts, a pattern that is repeated among students who are black. We also note that white cooperative students tend to take slightly more credits in academic areas and slightly fewer vocational credits than do black cooperatives. A similar pattern holds for the non-cooperative subset.

While Table 13 deals with academic and vocational credits, Table 14 summarizes the total credits earned in high school by the cooperative and non-cooperative students. Total credits vary from the sum of academic and vocational credits by virtue of the inclusion of credits in such courses as physical education, health, and driver education, and so on. From Table 14, we can see that non-cooperative students in the academic curriculum earn more total high school credits than do cooperative students, who in turn earn more credits, on average, than do vocational curriculum students. This pattern is repeated when we break the total study sample down by sex and ethnic origin, with academic non-cooperative students earning the greatest number of credits, followed in every case by the cooperative, vocational non-cooperative and general non-cooperative students respectively.

In short, as one would expect, one educational impact of the cooperative program is that cooperative students tend to take about twice as many vocational credits as non-cooperative students. However, it is notable that they earn almost the same number of academic credits. Further, to the extent that some of the cooperative students might have enrolled in either the vocational or general curriculum in the absence of the cooperative program, the program seems to induce them to earn a greater number of total credits. Of course, this comparison assumes that cooperative students would view the vocational or general curriculum as a reasonable option--a relatively unlikely assumption for many cooperative students, we suspect.

TABLE 13
CURRICULUM STRUCTURE AS A FUNCTION OF SEX, ETHNIC ORIGIN, AND CLASS COHORT, STUDY SAMPLE

		Academic Credits		Vocational Credits	
		Cooperative	Non-cooperative	Cooperative	Non-cooperative
Total Sample	m	10.96	11.55	6.38	2.48
	sd	(3.00)	(3.79)	(2.59)	(1.97)
	n	359	1056	359	1056
Males	m	11.09	11.84	5.74	2.58
	sd	(3.00)	(3.96)	(2.01)	(2.01)
	n	160	491	160	491
Females	m	10.85	11.30	5.90	2.39
	sd	(2.99)	(3.63)	(2.87)	(1.94)
	n	199	565	199	565
Whites	m	10.99	11.80	6.37	2.43
	sd	(3.01)	(3.91)	(2.60)	(1.98)
	n	333	789	333	789
Black & Other	m	10.58	10.83	6.57	2.64
	sd	(2.86)	(3.26)	(2.44)	(1.96)
	n	25	252	25	252
White Males	m	11.17	12.02	5.69	2.53
	sd	(2.97)	(4.09)	(2.00)	(2.02)
	n	148	393	148	393
Black & Other Males	m	10.23	11.11	6.18	2.78
	sd	(3.56)	(3.26)	(2.16)	(1.96)
	n	11	89	11	89
White Females	m	10.85	11.59	6.90	2.33
	sd	(3.05)	(3.71)	(2.89)	(1.94)
	n	185	396	185	396
Black & Other Females	m	10.86	10.68	6.88	2.56
	sd	(2.27)	(3.26)	(2.68)	(1.96)
	n	14	163	14	163

TABLE 13

Curriculum Structure as a Function of Sex, Ethnic Origin, and Class Cohort, Study Sample (continued)

		Academic Credits		Vocational Credits	
		Cooperative	Non-cooperative	Cooperative	Non-cooperative
1966 Cohort	m	11.02	11.86	5.36	2.58
	sd	(3.37)	(3.66)	(2.55)	(2.07)
	n	192	460	192	460
1970 Cohort	m	10.88	11.31	7.56	2.40
	sd	(2.50)	(3.88)	(2.08)	(1.89)
	n	167	596	167	596

Notes: m = cell mean
sd = standard of the cell mean
n = number of observations in the cell

TABLE 14
TOTAL CREDITS EARNED IN HIGH SCHOOL, STUDY SAMPLE[a/]

		Cooperative	Non-cooperative		
			Academic	General	Vocational
Total	m	19.11	19.29	15.31	17.58
	sd	(3.72)	(1.85)	(4.46)	(2.31)
	n	359	377	296	353
Males	m	18.44	18.90	15.00	17.19
	sd	(3.72)	(1.71)	(4.41)	(2.49)
	n	160	185	121	168
Females	m	19.64	19.67	15.53	17.94
	sd	(3.64)	(1.91)	(4.48)	(2.08)
	n	199	192	175	185
Blacks & Others	m	18.50	19.25	15.51	17.84
	sd	(4.77)	(1.84)	(4.17)	(2.12)
	n	25	61	88	95
Whites	m	19.16	19.32	15.33	17.47
	sd	(3.64)	(1.86)	(4.50)	(2.40)
	n	333	313	204	251

Notes: a/ m = cell mean
sd = cell standard deviation
n = cell size

Grade Point Averages. Some interesting patterns develop when we examine the grade point averages of the cooperative and non-cooperative groups. Table 15 details the ninth grade and cumulative grade point averages of the students in the study sample, as well as the changes in their grade averages between their ninth grade and senior or last year in high school.

First, we note that cooperative students have an average higher ninth grade and cumulative grade point average than do non-cooperative students. However, grade point averages tend to fall between the first year and senior or last year in high school for cooperative students, while they rise for non-cooperative students. Similar patterns hold when we break the total sample down by sex, ethnic origin, and class cohort. Thus, we have raised the possibility that the cooperative program has a negative impact on grades, a notion that is reinforced by the fact that cumulative grade averages tend to lie below freshman year averages for the cooperative students. This fall in grade point averages may be induced by the fact that cooperative students tend to have more months of employment in high school than non-cooperative students and that the cooperative students also work longer hours. The fall in grade point average, as we shall see, is especially noticeable among black students. This may also be due to the possibility that black students who enter the cooperative program change over into a more competitive academic environment vis-a-vis the school they spent ninth grade in, with the result that their senior GPA appears to drop more than it would have had their educational environment remained the same. Of course, this also suggests that the academic standards of the Patterson Cooperative High School are higher than those of the schools black students come from.

Indeed, it is interesting to note that black cooperative students have higher ninth grade grade point averages than their white ninth grade counterparts. This is true for blacks taken as a group and when we break that group down by sex. However, after a good ninth year relative to whites, the cumulative grade point average for black cooperative students is generally below the cumulative GPAs of the white cooperative students. Particularly severe is the fall in the GPA of black men between ninth grade and senior year: -.63 of a grade point. On average, between freshman year and the senior or last year in high school black GPA's fell by .45 of a point. When we contrast this performance with the grade averages of non-cooperative blacks, it appears that a cooperative education may be a mixed blessing at best for this ethnic group.

Tables 16 and 17 give a slightly different perspective of cooperative students' grade point averages vis-a-vis those of non-cooperative students. For both the total cooperative and non-cooperative subsets and when those subsets are broken down by sex and ethnic origin, academic non-cooperative students tend to earn the highest grade point averages,

TABLE 15
SELECTED GRADE POINT AVERAGES AS A FUNCTION OF SEX, ETHNIC ORIGIN, AND CLASS COHORT, STUDY SAMPLE

		Grade Point Average: Freshman Year		Cumulative Grade Point Average		Change in Grade Point Average: Freshman and Senior or Last Year in H.S.	
		Cooperative	Noncooperative	Cooperative	Noncooperative	Cooperative	Noncooperative
Total Sample	m	2.55	2.33	2.47	2.35	-0.05	0.14
	sd	(0.64)	(0.83)	(0.51)	(0.75)	(0.67)	(0.68)
	n	360	1057	359	1057	359	1057
Males	m	2.33	2.20	2.31	2.21	-0.00	0.12
	sd	(0.64)	(0.84)	(0.51)	(0.75)	(0.69)	(0.70)
	n	161	492	160	492	160	492
Females	m	2.72	2.44	2.60	2.47	-0.08	0.15
	sd	(0.58)	(0.79)	(0.48)	(0.74)	(0.65)	(0.67)
	n	199	565	199	565	199	565
Whites	m	2.53	2.39	2.49	2.41	-0.02	0.14
	sd	(0.64)	(0.84)	(0.52)	(0.77)	(0.65)	(0.68)
	n	333	790	333	790	333	790
Blacks & Others	m	2.71	2.14	2.27	2.16	-0.45	0.15
	sd	(0.63)	(0.73)	(0.40)	(0.66)	(0.79)	(0.69)
	n	26	252	25	252	25	252
White Males	m	2.31	2.24	2.32	2.26	0.04	0.13
	sd	(0.64)	(0.85)	(0.51)	(0.76)	(0.66)	(0.71)
	n	148	394	148	394	148	394

TABLE 15

Selected Grade Point Averages as a Function
of Sex, Ethnic Origin, and Class Cohort, Study Sample (continued)

		Grade Point Average: Freshman Year		Cumulative Grade Point Average		Change in Grade Point Average: Freshman and Senior or Last Year in H.S.	
		Coop-erative	Non-cooperative	Coop-erative	Non-cooperative	Coop-erative	Non-cooperative
Black & Other Males	m	2.57	1.99	2.18	2.01	-0.63	0.17
	sd	(0.70)	(0.75)	(0.50)	(0.64)	(0.80)	(0.66)
	n	12	89	11	89	11	89
White Females	m	2.71	2.54	2.62	2.57	-0.06	0.15
	sd	(0.58)	(0.81)	(0.49)	(0.75)	(0.64)	(0.65)
	n	185	396	185	396	185	396
Black & Other Females	m	2.84	2.22	2.33	2.24	-0.31	0.14
	sd	(0.57)	(0.70)	(0.29)	(0.66)	(0.79)	(0.71)
	n	14	163	14	163	14	163
1966 Cohort	m	2.49	2.39	2.40	2.41	-0.10	0.15
	sd	(0.66)	(0.84)	(0.50)	(0.76)	(0.66)	(0.66)
	n	192	461	192	461	192	461
1970 Cohort	m	2.61	2.29	2.54	2.30	0.01	0.13
	sd	(0.61)	(0.81)	(0.51)	(0.75)	(0.67)	(0.71)
	n	168	596	167	596	167	596

Notes: m = cell mean; sd = standard of the cell mean; n = number of observations in the cell.

TABLE 16
GRADE POINT AVERAGE, FRESHMAN YEAR, STUDY SAMPLE[a/]

		Cooperative	Non-cooperative		
			Academic	General	Vocational
Total	m	2.55	2.92	1.91	2.12
	sd	(0.64)	(0.62)	(0.73)	(0.69)
	n	360	377	296	353
Males	m	2.33	2.80	1.75	1.97
	sd	(0.64)	(0.66)	(0.73)	(0.68)
	n	161	185	121	168
Females	m	2.72	3.03	2.02	2.26
	sd	(0.58)	(0.57)	(0.72)	(0.67)
	n	199	192	175	185
Blacks & Others	m	2.71	2.71	1.84	2.08
	sd	(0.63)	(0.59)	(0.71)	(0.55)
	n	26	61	88	95
Whites	m	2.53	2.95	1.94	2.13
	sd	(0.64)	(0.62)	(0.74)	(0.74)
	n	333	313	204	251

Notes: a/ m = cell mean
sd = cell standard deviation
n = cell size

TABLE 17
GRADE POINT AVERAGE, SENIOR OR LAST YEAR, STUDY SAMPLE[a/]

		Cooperative	Non-cooperative		
			Academic	General	Vocational
Total	m	2.50	3.00	2.06	2.32
	sd	(0.62)	(0.60)	(0.87)	(0.72)
	n	359	377	296	353
Males	m	2.33	2.84	1.89	2.17
	sd	(0.63)	(0.60)	(0.77)	(0.68)
	n	160	185	121	168
Females	m	2.64	3.14	2.18	2.44
	sd	(0.57)	(0.57)	(0.91)	(0.73)
	n	199	192	175	185
Blacks & Others	m	2.31	2.93	2.00	2.18
	sd	(0.68)	(0.57)	(0.87)	(0.63)
	n	25	61	88	95
Whites	m	2.52	3.01	2.10	2.37
	sd	(0.61)	(0.61)	(0.88)	(0.75)
	n	333	313	204	251

Notes: a/ m = cell mean
sd = cell standard deviation
n = cell size

TABLE 18
GRADE POINT AVERAGE, CUMULATIVE, STUDY SAMPLE[a/]

		Cooperative	Non-cooperative		
			Academic	General	Vocational
Total	m	2.47	2.91	1.95	2.15
	sd	(0.51)	(0.55)	(0.69)	(0.58)
	n	359	377	296	353
Males	m	2.31	2.78	1.79	1.99
	sd	(0.51)	(0.59)	(0.63)	(0.52)
	n	160	185	121	168
Females	m	2.60	3.04	2.06	2.29
	sd	(0.4[illegible]	(0.49)	(0.70)	(0.59)
	n	199	192	175	185
Blacks & Others	m	2.27	2.73	1.89	2.08
	sd	(0.40)	(0.52)	(0.63)	(0.47)
	n	25	61	88	95
Whites	m	2.49	2.94	1.98	2.18
	sd	(0.52)	(0.55)	(0.70)	(0.62)
	n	333	313	204	251

Notes: a/ m = cell mean
sd = cell standard deviation
n = cell size

followed by the cooperative group and then by the vocational and general students respectively. Thus, even though the grade averages of the cooperative students fell over time, they were still high relative to the grade averages of the vocational and general students. The conceptual difficulty in attempts to rationalize this pattern lies in the fact that we may be mixing program impacts--falling grade point averages--with the self selection bias mentioned in Chapter One. The latter is involved since it might be relevant to argue that the cooperative students would have enrolled in the vocational curriculum in the absence of the alternative to attend Patterson Cooperative High School, even though their grade averages are generally higher than those of students enrolled in that curriculum.

Finally, even though the cooperative student has a lower GPA than the academic student, one must take into account that he earns more credits overall and works more out of school and thus has less time to study over the school year. Given these factors, one might be tempted to judge that the overall academic performance of the cooperative students is relatively high.

Absences. Tables 19 and 20 detail the available data on absences for the cooperative and non-cooperative students. As is evident from Table 19, for both the freshman and senior year cooperative students tend to be absent from school less frequently than non-cooperative students. Further, for the study sample as a whole, non-cooperative absences tend to rise over time while cooperative absences tend to remain unchanged. Even though this pattern does not always hold for the various subgroups into which Table 20 breaks the cooperative and non-cooperative groups, the result noted does suggest that one impact of the cooperative program may be to decrease the rate of cooperative absences vis-a-vis non-cooperative absences.

Table 20 shows the cooperative absences as opposed to the non-cooperative absences when the latter are broken down into the three relevant curricula. Cooperative students are absent no more frequently than the academic students and less frequently than students enrolled in the vocational and general curricula.

Graduation Rates and Post-Secondary Education. Table 21 shows that the graduation rate among cooperative students is somewhat higher than among non-cooperative students, a pattern that holds for the sex, ethnic origin, and cohort subsets of the total sample. To the extent that a high school diploma is a benefit to its holder, it is to a student's advantage to attend the cooperative high school in as much, other things equal, as he appears to be more likely to obtain his diploma in that setting.

Finally, Table 21 also shows that a lower proportion of cooperative students obtain post-secondary education when compared with the non-cooper-

TABLE 19
PERCENT OF TIME ABSENT,
FRESHMAN AND SENIOR OR LAST YEAR, STUDY SAMPLE

		Cooperative	Non-cooperative
Freshman Year:			
Total Study Sample	m	3	4
	sd	(3)	(4)
	n	327	978
Males	m	3	4
	sd	(3)	(4)
	n	141	454
Females	m	3	4
	sd	(3)	(4)
	n	186	524
Whites	m	3	4
	sd	(3)	(4)
	n	301	731
Black & Other	m	3	4
	sd	(4)	(4)
	n	25	235
White Males	m	3	4
	sd	(3)	(4)
	n	129	362
Black & Other Males	m	4	4
	sd	(5)	(4)
	n	11	85
White Females	m	3	4
	sd	(3)	(4)
	n	172	369
Black & Other Females	m	1	4
	sd	(2)	(4)
	n	14	150
1966 Cohort	m	3	4
	sd	(3)	(4)
	n	169	430

TABLE 19

Percent of Time Absent, Freshman and
Senior or Last Year, Study Sample (continued)

		Cooperative	Non-cooperative
1970 Cohort	m	2	4
	sd	(3)	(4)
	n	158	548
Senior Year:			
Total Study Sample	m	3	6
	sd	(4)	(5)
	n	355	1020
Males	m	3	5
	sd	(3)	(4)
	n	158	477
Females	m	4	6
	sd	(4)	(5)
	n	197	543
Whites	m	3	5
	sd	(4)	(5)
	n	329	769
Blacks & Others	m	5	6
	sd	(5)	(5)
	n	25	237
White Males	m	2	5
	sd	(3)	(4)
	n	146	383
Black & Other Males	m	5	6
	sd	(5)	(5)
	n	11	86
White Females	m	4	6
	sd	(4)	(5)
	n	183	386
Black & Other Females	m	4	6
	sd	(5)	(5)
	n	14	151

TABLE 19

Percent of Time Absent, Freshman and
Senior or Last Year, Study Sample (continued)

		Cooperative	Non-cooperative
1966 Cohort	m	3	5
	sd	(3)	(4)
	n	190	452
1970 Cohort	m	4	7
	sd	(4)	(5)
	n	165	568

TABLE 20
PERCENT OF TIME ABSENT,
FRESHMAN AND SENIOR OR LAST YEAR, STUDY SAMPLE

		Cooperative	Non-cooperative		
			Academic	General	Vocational
Freshman Year:					
Total Study Sample	m	3	3	5	4
	sd	(3)	(3)	(4)	(4)
	n	327	358	269	327
Males	m	3	3	4	4
	sd	(3)	(3)	(4)	(4)
	n	141	177	108	155
Females	m	3	3	5	4
	sd	(3)	(3)	(4)	(4)
	n	186	181	161	172
Blacks & Others	m	3	2	5	4
	sd	(4)	(3)	(4)	(4)
	n	25	58	81	89
Whites	m	3	3	5	4
	sd	(3)	(3)	(4)	(4)
	n	301	298	185	231
Senior or Last Year:					
Total Study Sample	m	3	4	8	6
	sd	(4)	(4)	(5)	(5)
	n	355	373	383	342
Males	m	3	4	6	6
	sd	(3)	(4)	(5)	(5)
	n	158	184	116	164
Females	m	4	4	8	6
	sd	(4)	(4)	(5)	(5)
	n	197	189	167	178
Blacks & Others	m	5	4	8	7
	sd	(5)	(4)	(6)	(5)
	n	25	59	81	91

TABLE 20

Percent of Time Absent, Freshman and Senior or Last Year, Study Sample (continued)

		Cooperative	Non-cooperative		
			Academic	General	Vocational
Whites	m	3	4	8	5
	sd	(4)	(4)	(5)	(4)
	n	329	311	198	244

Notes: m = cell mean
sd = cell standard deviation
n = cell size

TABLE 21

GRADUATION STATUS AND PERCENT ACQUIRING SOME POST-SECONDARY EDUCATION

		Graduated		Post-Secondary Education	
		Cooperative	Non-cooperative	Cooperative	Non-cooperative
Total Sample	%	98.9	91.0	54.9	63.9
	n	360	1057	359	1056
Males	%	98.8	91.7	63.7	68.3
	n	161	492	160	492
Females	%	99.0	90.4	47.7	60.1
	n	199	565	199	564
Whites	%	99.1	91.3	53.9	64.1
	n	333	790	332	789
Blacks & Others	%	96.2	90.5	69.2	63.1
	n	26	252	26	252
White Males	%	99.3	91.0	64.6	70.1
	n	148	394	147	394
Black & Other Males	%	91.7	91.0	58.3	60.7
	n	12	89	12	89
White Females	%	98.9	90.9	45.4	58.2
	n	185	369	185	395
Black & Other Females	%	100.0	90.2	78.6	64.4
	n	14	163	14	163

TABLE 21
Graduation Status and Percent Acquiring Some Post-secondary Education (continued)

		Graduated		Post-Secondary Education	
		Cooperative	Non-cooperative	Cooperative	Non-cooperative
1966 Cohort	%	99.0	94.1	62.5	72.7
	n	192	461	192	461
1970 Cohort	%	98.8	88.6	46.1	57.1
	n	168	596	167	495

Note: n = total number on which the percent is based.

ative group. This tendency should surprise few since the cooperative education tends to be oriented more to immediate employment after high school graduation than the non-cooperative curriculum.

Summary. We have seen in this section how students in the cooperative program tend to earn fewer academic credits and more credits in vocational courses than their non-cooperative counterparts. Further, cooperative students tend to be less likely to obtain post-high school education. As mentioned above, this pattern might be expected due to the fact that the cooperative program is career oriented.

In addition, the cooperative students tend to have higher grade point averages than their non-cooperative cohorts, a trend that is even more pronounced when we compare the cooperative group with the vocational and general curriculum students. Also, the cooperative students tend to miss less school and are much more likely to graduate than the general and vocational subsets of the non-cooperative group. To the extent that cooperative students are drawn from the general and vocational student populations, the data tend to support the hypothesis that cooperative education benefits the students enrolled. However, as we have suggested before, it may be that only the more ambitious students are the ones most likely to attend Patterson High School, in which case the net benefits of the program are less clear. More sophisticated analysis must await the regression models of later chapters.

C. Post-High School Educational Experience

We now examine some of the post-high school effects of the various high school curricula under consideration--effects which clearly occur after the students have left high school. The analysis of post-secondary education as a program output presents two problems for this analysis. The first problem is concerned with the fact that we have noted before--the cooperative and non-cooperative students come from different populations. The second deals with the fact that net rates of return to education are the most appropriate index of comparison and not simple comparisons of graduation rates or probabilities of acquiring further education.

Since the cooperative and non-cooperative students come from different populations, that is, since we do not have an experiemntal design with random assignment of treatments, it is certain that the two groups place different valuations on the acquisition of advanced education, income, status, security and those other economic and non-economic factors which give a person satisfaction throughout his life. Thus, even if we observe differential rates of exposure to post-secondary education, different dollar amount investment expenditures on education, or different option values to acquire future education,[1] we cannot be sure that such differences represent "goods" or "bads." If the cooperative student has a set of values, desires and attitudes such that he places a relatively lower weight on a given type or amount of education than does a non-cooperative student, then a relative comparison of the two groups of students on the basis of this particular index is misleading. The reason is that to make the comparison assumes that the two student groups place equal value weights on the index in question. In the strictest terms, this latter assumption is almost certain to be untenable for most indices we might choose, including money. With respect to the second major point listed above, it is generally inappropriate to discuss the physical amounts or costs of an education strategy without comparing relative benefits to these costs. Thus, even if we know the comparative costs of two different strategies of educational investment, we do not know which is more or less desirable (or, neither may be desirable compared to a third alternative) unless we discuss benefits net of costs. Thus, the analysis presented herein is only one side of the coin. For instance, while it is generally assumed that persons with more education also have greater access to on-the-job training, we would wish to determine if the cooperative students were receiving less (more) on-the-job training than was optimal for them, given their perception of their educational needs and the relative costs and benefits involved.

The above problem then becomes reflected in attempts to compare wage rates and earnings, for differential amounts of formal and on-the-job training imply different wage rates and earnings streams over time. For example, even if the analysis reveals that on the average the wage rates of cooperative students are higher than those of non-cooperative students, the differential may or may not be high enough to cover the added costs of such education. And, cooperative vocational education does appear to cost more than non-cooperative education.

But again, it is not just the wage rate that is important to a person; it is the "net advantages" of an occupation which are important in influencing educational and occupational choices. Thus, even if we calculate a money rate of return on educational investment which is lower for cooperative than for non-cooperative students, because the two groups of students may experience different net advantages among given occupations, the cooperative educational strategy may still be an efficient educational investment from the standpoint of the individual student. The problem would be less serious if we could assume that the two student groups came from the same population. Then we could assume that they have similar perceptions of net advantages among occupations as well as net disadvantages among educational strategies. As a result, comparison of educational investment strategies in pure money terms would be more likely to indicate the relative efficiencies of the educational alternatives.

---

[1] See Burton A. Weisbrod, External Benefits of Education, for a description of the option value of education, p. 19 ff.

Given these relatively severe problems, we turn to a description of the post-secondary educational experiences of the students in the study sample.

Percent of Students with Some Post-Secondary Education. As is evident from Table 22, about 55 percent of the cooperative students gain some post-secondary educational experience as opposed to 63.9 percent of the non-cooperative group. This pattern is not at all surprising given the orientation of the cooperative program.

When broken down by sex, we see that 63.7 percent of the cooperative males have some post-secondary educational experience, as opposed to 47.7 percent of the cooperative females. The pattern is the same for non-cooperative students, but the differences are not as great: 68.3 percent of non-cooperative males versus 60.1 percent of the females.

A relatively large proportion of black cooperative students gain some exposure to post-secondary education--69.2 percent, as opposed to 63.1 percent for the black non-cooperative group. The pattern is reversed among white students, where the percent of white cooperative students with post-high school educational experience is less than that of the white non-cooperative group.

Type of Post-Secondary Education. The various types of post-high school educational programs to which the cooperative and non-cooperative students have been exposed are shown in Tables 23 and 24. Examining the total column for a moment, we see that 55.9 percent of the non-cooperative group has attended a four year college or university. Although more cooperative students attend this type of institution as opposed to other types of post-secondary education, the relative percentage is somewhat less, 37.2 percent. Further examination of the total column shows that cooperative students tend to make greater use--on a relative basis--of private trade schools and community or junior colleges. Finally, Table 24 shows that proportionately, community colleges and four year universities were equally viable forms of post-secondary training for black cooperative students but that for the white cooperative and the black and white non-cooperative groups, four year colleges or universities were the most important source of post-high school education. The extent to which relative costs rather than other educational factors affect this ethnic pattern is not clear.

TABLE 22
POST-SECONDARY EDUCATION - BY SEX AND ETHNIC ORIGIN[a]

	Cooperative			Non-cooperative		
	No Post-High School Education	Have Post-High School Education	Total	No Post-High School Education	Have Post-High School Education	Total
Sex:						
Males	58	102	160	156	336	492
	36.3	63.7	100.0	31.7	68.3	100.0
	35.8	51.8	44.6	40.9	49.8	46.6
Females	104	95	199	225	339	564
	52.3	47.7	100.0	39.9	60.1	100.0
	64.2	48.2	55.4	59.1	50.2	53.4
Total	162	197	359	381	675	1056
	45.1	54.9	100.0	36.1	63.9	100.0
	100.0	100.0	100.0	100.0	100.0	100.0
Ethnic Origin:						
Blacks & Others	8	18	26	93	159	252
	30.8	69.2	100.0	36.9	63.1	100.0
	5.0	9.1	7.3	24.7	23.9	24.2
Whites	153	179	332	283	506	789
	46.1	53.9	100.0	35.9	64.1	100.0
	95.0	90.9	92.7	75.3	76.0	75.8

TABLE 22
Post-secondary Education - By Sex and Ethnic Origin[a] (continued)

	Cooperative			Non-cooperative		
	No Post-High School Education	Have Post-High School Education	Total	No Post-High School Education	Have Post-High School Education	Total
Total	161 45.0 100.0	197 55.0 100.0	358 100.0 100.0	376 36.1 100.0	665 63.9 100.0	1041 100.0 100.0

Notes: a/ The numbers in each cell are the cell size, the row percentage and the column percentage.

TABLE 23
TYPE OF POST-SECONDARY EDUCATION, BY SEX[a/]

	Cooperative			Non-cooperative		
	Male	Female	Total[b/]	Male	Female	Total[b/]
Private Business or Trade School	19 59.4 14.3	13 40.6 13.3	32 100.0 13.8	42 46.7 10.7	48 53.3 12.6	90 100.0 11.6
Company Training School	8 72.7 6.0	3 27.3 3.1	11 100.0 4.8	12 54.5 3.1	10 45.5 2.6	22 100.0 2.8
Correspondence School	8 88.9 6.0	1 11.1 1.0	9 100.0 3.9	12 60.0 3.1	8 40.0 2.1	20 100.0 2.6
Armed Forces	13 92.9 9.8	1 7.1 1.0	14 100.0 6.1	34 100.0 8.7	0 0.0 0.0	34 100.0 4.4
Community or Junior College	27 60.0 20.3	18 40.0 18.4	45 100.0 19.5	45 39.1 11.5	70 60.9 18.4	115 100.0 14.9
Four Year College or University	45 52.3 33.8	41 47.7 4.18	86 100.0 37.2	227 52.5 57.9	205 47.5 53.8	432 100.0 55.9
Other	13 38.2 9.8	21 61.8 21.4	34 100.0 14.7	20 33.3 5.0	40 66.7 10.5	60 100.0 7.8
Total	134 57.8 100.0	98 42.2 100.0	232 100.0 100.0	392 50.7 100.0	381 49.3 100.0	773 100.0 100.0

Notes: a/ The numbers in each cell are the cell size, row percentage and column percentage.

b/ Individuals can have more than one type of training. Hence, column totals can exceed study sample totals.

TABLE 24
TYPE OF POST-SECONDARY EDUCATION, BY ETHNIC ORIGIN a/

	Cooperative			Non-cooperative		
	Black & Other	White	Total b/	Black & Other	White	Total b/
Private Business or Trade School	1	31	32	31	58	89
	3.1	96.9	100.0	34.8	65.2	100.0
	5.3	14.6	13.9	16.5	10.1	11.5
Company Training School	1	10	11	7	15	22
	9.1	90.9	100.0	31.8	68.2	100.0
	5.3	4.8	4.8	3.7	2.6	2.9
Correspondence School	1	8	9	5	15	20
	11.1	88.9	100.0	25.0	75.0	100.0
	5.3	3.8	3.9	2.7	2.6	2.7
Armed Forces	2	12	14	5	29	34
	14.3	85.7	100.0	14.7	85.3	100.0
	10.5	5.7	6.2	2.7	5.0	4.4
Community or Junior College	7	38	45	35	79	114
	15.6	84.4	100.0	30.7	69.3	100.0
	36.8	17.9	19.5	18.6	13.7	14.9
Four Year College or University	7	79	86	87	340	427
	8.1	91.9	100.0	20.4	79.6	100.0
	36.8	37.2	37.2	46.2	59.2	55.9
Other	0	34	34	18	39	58
	0.0	100.0	100.0	31.5	68.5	100.0
	0.0	16.0	14.7	9.6	6.8	7.5
Total	19	212	231	188	573	763
	8.2	91.8	100.0	24.9	75.1	100.0
	100.0	100.0	100.0	100.0	100.0	100.0

Notes: a/ The numbers in each cell are the cell size, row percentage and column percentage.

b/ Individuals can have more than one type of training. Hence, column totals can exceed study sample totals.

D. Voting Behavior

One of the more interesting non-economic indices of educational benefits is voting behavior. It is well documented that the awareness of the value of participation in the democratic process increases with the increase in one's educational level. Likewise, the percentage of those who vote increases with educational level.[2]

However, the impact of the type of education, especially at the primary and secondary levels, on voting participation is not well established. Past research on the impact of a high school civics curriculum has shown little or no influence upon voting participation. The magnitudes of the effects were positive with respect to participation in the civics curriculum but were extremely weak. One possible reason was that such a curriculum represents information redundancy; that is, behavior learned in this curriculum is also learned in other courses in school, and so there would be little reason to suspect even minor effects on behavior. A test of this hypothesis was made by performing an interaction analysis on the basis of race. When this was done, it was seen that the civics curriculum exerted much more influence on Negro than on white students, thus tending to bear out the above hypothesis.[3]

However, there is relatively more exposure to what one could term the "liberal arts" in an academic or college preparatory curriculum as distinct from a one-shot civics course or other broad curricula in high school. Thus, information redundancy may not be as severe a problem in attempting to isolate the effect of curriculum since in this case an entire course of study is the object of investigation.

In the present study we attempted to ascertain if a sample respondent was eligible to register and, if so, had he or she registered to vote. Registration rather than actual voting behavior was selected as the index due to the fact that the members of the 1970 cohort, while over age 18, in some cases were not yet 21 at the time of the study. Also, agitation over lowering the voting age to 18 was current at the time the sample data were collected so that one could expect considerable interest in voter registration among the students in the study sample. Table 25

---

[2] See, for instance, V.O. Key, Jr., Public Opinion and American Democracy, New York: Alfred A. Knopf, 1961, pp. 324-25. Also, A. Campbell, W. Miller, Philip Converse and Donald Stokes, The American Voter, New York: John Wiley and Sons, Inc., 1960, Table 17-11, pp. 495.

[3] See Kenneth P. Langton and M. Kent Jennings, "Political Socialization and the High School Civics Curriculum in the United States," American Political Science Review, September, 1968, pp. 852-867.

TABLE 25
NUMBER AND PERCENT CURRENTLY REGISTERED TO VOTE - BY SEX, ETHNIC ORIGIN AND CURRICULUM[a]

		Cooperative		Non-cooperative					
				Academic		General		Vocational	
		Male	Female	Male	Female	Male	Female	Male	Female
Registered	n	49	61	72	53	30	32	44	43
	%	30.4	30.7	38.9	27.6	24.8	18.3	26.0	23.2
Not Registered	n	110	138	111	137	89	140	120	140
	%	68.3	69.3	60.0	71.4	73.6	80.0	71.0	75.7
		Black & Other	White	Black & Other	White	Black & Other	White	Black & Other	White
Registered	n	1	109	24	101	14	48	22	65
	%	3.8	32.7	39.3	32.3	15.9	23.5	23.2	25.8
Not Registered	n	25	222	36	211	73	154	73	184
	%	96.2	66.7	59.0	67.4	83.0	75.5	76.8	73.0

Notes: The column percentages do not always sum to 100.0 due to exclusion of "not ascertained" information from the table.

details the gross results of the analysis.

There are considerable differences in voter registration behavior as a function of sex, ethnic origin and curriculum.

Sex and Curriculum. About 30 percent of the eligible male cooperative students are registered while this proportion is almost 39 percent for male academic students. However, only about 25 percent of the eligible male general curriculum students are registered, while this is true of only 26 percent of male vocational students. Female cooperative students, on the other hand, have the highest frequency of registration, about 30 percent. This contrasts with about 28 percent for academic females and 18 percent for general females.

Ethnic Origin and Curriculum. Only about 4 percent (one student) of the black cooperative students are registered, while about 39 percent of the black academic students are registered. About 16 percent of the general and 23 percent of the vocational black students are registered. Almost equal percentages of white cooperative and academic students are registered, 32.7 versus 32.3 percent. But the registration of white general and vocational students drops to about 24 and 26 percent, respectively.

In summary, cooperative students have a generally higher rate of voter registration than general and vocational students, but a lower rate than academic students. Black cooperative students are much less likely to be registered relative to blacks in the other non-cooperative curricula.

E. Summary

We have outlined in this chapter some of the educational characteristics of the cooperative and non-cooperative subsets of the study sample. Briefly, in line with expectations, we have seen that cooperative students tend to take more vocational education courses than their non-cooperative counterparts and slightly fewer academic courses.

The second major impact of the cooperative education program was the fall in grade averages over time of the cooperative students. As argued in the text, this may be in part due to the fact that the cooperative students worked longer hours at their jobs while still in high school than did the non-cooperative students and to the fact that black students have changed their educational environment.

Third, we described the post-secondary educational experience of the students in the study, with particular attention to the conceptual problems involved in evaluating post-secondary education as a program output.

Finally, we discussed a non-economic index of the impact of the cooperative program, namely, voting behavior of the cooperative and non-cooperative groups.

Final conclusions to this analysis await the more complex multiple regression models in the following chapters. Then we may see major changes in net effects attributable to the cooperative vocational program.

CHAPTER 4

THE RELATIONSHIP OF JOB SKILLS TO HIGH SCHOOL EDUCATION

A. Introduction

The present chapter is devoted to an analysis of the relationship of the various high school curricula to actual post-high school employment. Specifically, the chapter is broken into two parts: first, we identify the principal source of job skills, and second, we examine the relationships between jobs held and one's high school education. We expect to find, if the cooperative vocational education program has a significant impact on the labor market experience of its enrollees, that the cooperative students in general see a closer tie between post-high school employment and the secondary educational process than do the non-cooperative students.

B. Main Source of Skills Relative to Occupation after High School

The estimation by the students of the main source of their skills relative to the jobs they hold once they have left high school is of value in identifying the degree of correlation between skills learned in high school and skills required on the job. Several factors may operate to keep this correlation low. First, the skills taught in high school may be inadequate or inappropriate for the occupation for which they are intended. Second, the skills may be appropriate for the intended occupations, but for some reason the students ultimately choose different occupations. A cross-classification of skill by occupation, at least for cooperative students, would help differentiate between these two reasons except that occupations are defined at such a gross level of specificity as to be almost meaningless. Unfortunately, more narrow sets of occupational definition result in small or zero observation cells. Thus, the relationships described herein reflect the possible combined effect of job shift and inappropriate skills being taught for a given job. Finally, a further possibility exists: it may well be that as time passes a greater proportion of skills for a given job will be learned on the job or in formal on-the-job training relative to those skills acquired in high school. Students may then see the relative share of vocational skills as small. The sheer fact of passage of time with accumulated on-the-job training could account for this relative shift. Fortunately, we have attempted to control for this possibility by collecting data on the source of job skills for both the first job after high school and the last job or most recent job held. Thus, we turn to Tables 26 to 27 which detail the source of skills on the first and last jobs, broken down by sex and ethnic origin.

Main Source of Skills: General Impressions. Begin by examining the total columns in Tables 26 and 27.[1] On the first job after high school, 29 percent of the cooperative students report the high school as the main source of skills. On the other hand, only 7.7 percent of the non-cooperative students stated that the high school was the main source. Formal on-the-job training was the main source of skills on the first job for 18.8 percent of the cooperative students and 16.1 percent for non-cooperative students. In a closely related category, 42.2 percent of the cooperative students said that they mainly obtained job skills "at work" on the first job as did 63.0 percent of the non-cooperative students.

As expected, the high school becomes relatively less important as a source of job skills over time. This is borne out by Table 29, which shows main source of job skills for the last job or most recent job since leaving high school. The percent of cooperative students still finding the high school most important on the last job has fallen to 22.3 percent, and the percentage has fallen to 7.7 percent for non-cooperative students. As predicted, the percent of cooperative students identifying formal on-the-job training and work as the most important source of job skills rise over time--to 22.0 percent and 45.2 percent, respectively.

Main Source of Job Skills: By Sex. As Table 26 shows, cooperative males are less likely than females to indicate high school shop or classes as the main source of skills on the first job since leaving high school, 23.4 versus 33.7 percent, respectively. The pattern is similar for the last job since leaving high school, 16.8 versus 26.8 percent, respectively. The absolute difference between the two groups stays about the same, but the relative difference increases over time. Male and female cooperative students report equal likelihood of learning skills on the first job at work, 42.3 versus 42.4 percent; however, this proportion increases to 48.3 percent for cooperative males on the last job while it stays almost static at 42.7 percent for females.

For the non-cooperative group, only 3.7 percent of the males report the high school shop or classes as the main source of skills on the first job. This rises slightly to 4.7 percent on the last job. But 14.9 percent of the females in the non-cooperative group report this as a main source of skills on the first job, with the ratio dropping to 10.4 percent on the last job since leaving high school.

---

[1] The Total columns in Tables 26 and 27 would ideally correspond exactly to the total columns in Tables 28 and 29, respectively. Slight discrepencies appear due to the lack of identification of ethnic origin.

TABLE 26
MAIN SOURCE OF SKILLS, FIRST JOB SINCE LEAVING HIGH SCHOOL - BY SEX[a]

	Cooperative			Non-cooperative		
	Male	Female	Total	Male	Female	Total
High School Shop or Classes	32	56	88	14	65	79
	36.4	63.6	100.0	17.7	82.3	100.0
	23.4	33.7	29.0	3.7	14.9	9.7
Apprentice Program	10	1	11	17	4	21
	90.9	9.1	100.0	81.0	19.0	100.0
	7.3	0.6	3.6	4.4	0.9	2.6
Formal On-the-Job Training	28	29	57	40	91	131
	49.1	50.9	100.0	30.5	69.5	100.0
	20.4	17.5	18.8	10.6	20.9	16.1
At Work	58	70	128	272	241	513
	45.3	54.7	100.0	53.0	47.0	100.0
	42.4	42.2	42.2	71.8	55.4	63.0
Elsewhere	8	9	17	35	34	69
	47.1	52.9	100.0	50.7	49.3	100.0
	5.8	5.4	5.6	9.2	7.9	8.5
Not Ascertained	1	1	2	1	0	1
	50.0	50.0	100.0	100.0	0.0	100.0
	0.7	0.6	0.7	0.3	0.0	0.1
Total	137	166	303	379	435	814
	45.2	54.8	100.0	46.6	53.4	100.0
	100.0	100.0	100.0	100.0	100.0	100.0

Notes: a/ The numbers in each cell are the cell size, row percentage and column percentage.

TABLE 27

MAIN SOURCE OF SKILLS, LAST JOB SINCE LEAVING HIGH SCHOOL - BY SEX[a/]

	Cooperative			Non-cooperative		
	Male	Female	Total	Male	Female	Total
High School Shop or Classes	24 34.3 16.8	46 65.7 26.8	70 100.0 22.3	19 28.8 4.7	47 71.2 10.4	66 100.0 7.7
Apprentice Program	9 81.8 6.3	2 18.2 1.2	11 100.0 3.5	15 71.4 3.7	6 28.6 1.3	21 100.0 2.5
Formal On-the-Job Training	34 49.3 23.8	35 50.7 20.5	69 100.0 22.0	65 39.2 16.0	101 60.8 22.4	166 100.0 19.4
At Work	69 48.6 48.3	73 51.4 42.7	142 100.0 45.2	261 52.2 64.3	239 47.8 53.0	500 100.0 58.3
Elsewhere	7 33.3 4.8	14 66.7 8.2	21 100.0 6.7	46 44.2 11.3	58 55.8 12.9	104 100.0 12.1
Not Ascertained	0 0.0 0.0	1 100.0 0.6	1 100.0 0.3	0 0.0 0.0	0 0.0 0.0	0 0.0 0.0
Total	143 45.5 100.0	171 54.5 100.0	314 100.0 100.0	406 47.4 100.0	451 52.6 100.0	857 100.0 100.0

Notes: a/ The numbers in each cell are the cell size, row percentage and column percentage.

About 71.8 percent of the non-cooperative males report the job as the main source of skills on the first job since high school. This figure is only 55.4 percent for females. The respective ratios for males and females drop to 64.3 and 53.0 for the last job. For males, this shift is partly accounted for by a rise from 10.6 to 16.0 for formal on-the-job training as a source of skills. In summary, cooperative males were more than five times more likely to learn the skills of their first job from high school shop or classes compared to their non-cooperative counterparts but this ratio is only slightly larger than two to one for cooperative females vis-a-vis their non-cooperative counterparts. Even so, while such relative impacts suggest that the cooperative program is fulfilling its intended function, over three-fifths of the males and females learn most of their skills of their first job either at work or on formal on-the-job training.

Main Source of Job Skills: By Ethnic Origin. Tables 28 and 29 detail the main source of skills as a function of ethnic origin. Cooperative blacks were much more likely than whites to specify the high school shop or classes as the main source of skills on the first job since leaving high school--45.0 versus 27.7 percent. This is also true for the non-cooperative sample, where the proportion is 18.3 for blacks and 7.2 for whites. Both black and white non-cooperative students are more likely to cite the job as the dominant source of skills, 48.9 and 67.4 percent, respectively, compared to black and white cooperative students where the proportions are 35.0 and 42.9 respectively. Thus, we see that on the basis of both sex and ethnic origin, cooperative students place less stress on the job and more on the school as the main source of skills on the first job. As with the sex cross-classifications above, this is prima facie evidence that the cooperative program, in relative terms, is doing what it says it does, that is, it gives young people job entry skills, though it is more effective for blacks than for whites.

It is notable that no cooperative blacks cite apprenticeship as the main source of skills on the first job. But the proportions doing so for black and white non-cooperative students are similar, 2.2 versus 2.6 percent. Unfortunately the small sample sizes preclude any judgment as to the possible effect of discrimination in influencing the size of these apprenticeship proportions.

For the last job after high school, the proportion of black and white cooperative students that cite the school as the main source of skills drops a few percentage points to 42.9 and 20.5 percent, respectively. The absolute and relative drop is greater for whites than for blacks. One possibility but not the only one, is that whites acquire greater access to on-the-job training over time. This could imply that blacks and whites are placed in different job ladders, with whites in job ladders that provide greater opportunity for advancement, that is, on-the-job

TABLE 28
MAIN SOURCE OF SKILLS, FIRST JOB SINCE LEAVING HIGH SCHOOL--BY ETHNIC ORIGIN[a]

	Cooperative			Non-cooperative		
	Black & Other	White	Total	Black & Other	White	Total
High School Shop or Classes	9	78	87	33	45	78
	10.3	89.7	100.0	42.3	57.7	100.0
	45.0	27.7	28.8	18.3	7.2	9.7
Apprentice Program	0	11	11	4	16	20
	0.0	100.0	100.0	20.0	80.0	100.0
	0.0	3.9	3.6	2.2	2.6	2.5
Formal On-the-Job Training	4	53	57	33	95	128
	7.0	93.0	100.0	25.8	74.2	100.0
	20.0	18.8	18.8	18.3	15.2	15.9
At Work	7	121	128	88	420	508
	5.5	94.5	100.0	17.3	82.7	100.0
	35.0	42.9	42.5	48.9	67.4	63.3
Elsewhere	0	17	17	21	47	68
	0.0	100.0	100.0	30.9	69.1	100.0
	0.0	6.0	5.6	11.7	7.6	8.5
Not Ascertained	0	2	2	1	0	1
	0.0	100.0	100.0	100.0	0.0	100.0
	0.0	0.7	0.7	0.6	0.0	0.1
Total	20	282	302	180	623	803
	6.6	93.4	100.0	22.4	77.6	100.0
	100.0	100.0	100.0	100.0	100.0	100.0

Notes: a/ The numbers in each cell are the cell size, row percentage and column percentage.

TABLE 29
MAIN SOURCE OF SKILLS, LAST JOB SINCE LEAVING HIGH SCHOOL--BY ETHNIC ORIGIN[a]

	Cooperative			Non-cooperative		
	Black & Other	White	Total	Black & Other	White	Total
High School Shop or Classes	9	60	69	28	38	66
	13.0	87.0	100.0	42.4	57.6	100.0
	42.9	20.5	22.0	15.0	5.8	7.8
Apprentice Program	0	11	11	4	16	20
	0.0	100.0	100.0	20.0	80.0	100.0
	0.0	3.8	3.5	2.2	2.4	2.4
Formal On-the-Job Training	4	65	69	42	121	163
	5.8	94.2	100.0	25.8	74.2	100.0
	19.0	22.3	22.0	22.6	18.3	19.3
At Work	8	134	142	86	408	494
	5.6	94.4	100.0	17.4	82.6	100.0
	38.1	45.9	45.4	46.2	61.8	58.4
Elsewhere	0	21	21	26	77	103
	0.0	100.0	100.0	25.2	74.8	100.0
	0.0	7.2	6.8	14.0	11.7	12.1
Not Ascertained	0	1	1	0	0	0
	0.0	100.0	100.0	0.0	0.0	0.0
	0.0	0.3	0.3	0.0	0.0	0.0
Total	21	292	313	186	660	846
	6.7	93.3	100.0	22.0	78.0	100.0
	100.0	100.0	100.0	100.0	100.0	100.0

Notes: a/ The numbers in each cell are the cell size, row percentage and column percentage.

training. The potential amount of on-the-job training that inheres in a job or job ladder is clearly an indicator of the advancement potential of such a job or job ladder. Again, no black cooperative students cite an apprenticeship program as the main source of skills, and formal on-the-job training drops over time as a main source of job skills for blacks.

Slightly different patterns exist for non-cooperative students. Now blacks cite the high school as the main source of skills only 15.0 percent of the time and whites, 5.8 percent. The proportions stressing the job fall to 46.2 percent for blacks and 61.8 percent for whites--still higher than the comparable cooperative student experience by about 16 percentage points in the case of whites but only 8 points in the case of blacks. (Table 29). Finally, it is interesting to note that, among those who cite the high school shop or classes as the main source of skills on both first and last jobs, cooperative whites represent a much higher proportion than cooperative blacks, while the ethnic proportions for non-cooperative students are more nearly equal.

C. Relation of Employment Experiences to High School Curriculum

In this section we undertake a description of the relationship of occupation to high school curriculum and overall career interests. Taken as a whole, these data describe crucial non-monetary aspects of one's job which contribute to overall job satisfaction. In addition, the responses to these data are an index of the degree to which students had access to educational choices that were consistent with their long-run career interests.

It is instructive to get a sense of the attitudinal aspects of job search behavior of the cooperative and non-cooperative students as well as feeling for their broad psychological attitudes, since these attitudes and behavioral characteristics may ultimately influence the type of job a person gets. Thus, we turn initially to Table 30.

Based on their own responses, as detailed in Table 30, cooperative students appeared to be more sure of themselves when they last applied for a job--79.4 percent indicate they were "very sure" or "fairly sure" of themselves in a job interview situation compared to 73.8 percent of the non-cooperative students. They were somewhat less likely to worry about the end results of the particular job interview, too--71.9 percent versus 67.7 percent. Their confidence was borne out by the fact that they ultimately were more likely to get the job in question--79.3 percent versus 67.2 percent for the non-cooperative group. Thus, assuming the two acquire similar jobs, the cooperative program has reduced the risk and uncertainty involved in job search. On the other hand, the data suggest that non-cooperative students appear to function in an inherently more

TABLE 30
JOB EXPERIENCE ATTITUDES AFTER LEAVING HIGH SCHOOL

	Cooperative		Non-Cooperative	
	n	%	n	%
Please think back on the last time you looked for a job: Before you applied or were interviewed for that job, would you say you were:				
very sure of yourself	78	24.5	227	25.5
fairly sure of yourself	175	54.9	430	48.3
a little unsure of yourself	56	17.6	193	21.7
very unsure of yourself	10	3.1	41	4.6
Total[a/]	319	100.1	891	100.1
After you applied or were interviewed for that job, did you worry much about the results?				
a great deal	23	7.3	94	10.6
a fair amount	66	20.8	193	21.7
just a bit	135	42.6	366	41.2
not at all	93	29.3	236	26.5
Total	317	100.0	889	100.0
Did you get that particular job?				
No	65	20.7	289	32.8
Yes	249	79.3	592	67.2
Total	314	100.0	881	100.0
Have you ever tried to get a job that was a lot different from the usual type of work you do?				
No	173	54.6	379	43.2
Yes	144	45.4	498	56.8
Total	317	100.0	877	100.0

Table 30
Job Experience Attitudes after Leaving
High School (continued)

	Cooperative		Non-Cooperative	
	n	%	n	%
Do not expect too much out of life and be content with what comes your way.				
strongly disagree	122	34.7	379	37.7
disagree	177	50.3	451	44.8
agree	45	12.8	134	13.3
strongly agree	8	2.3	42	4.1
Total	352	100.1	1006	99.9
Planning only makes a person unhappy, since your plans hardly ever work out anyway.				
strongly disagree	167	47.4	447	44.3
disagree	172	48.9	434	43.0
agree	9	2.6	76	7.5
strongly agree	4	1.1	53	5.2
Total	352	100.0	1010	100.0

Note: a/ Totals are not always consistent due to not ascertained responses.

Percentages do not always add to 100.0 due to rounding.

n = the number of observations.

Table 30
Job Experience Attitudes after Leaving High School (continued)

	Cooperative		Non-Cooperative	
	n	%	n	%
In his work, all a person should want is a secure, not too difficult job with enough pay for a nice car and home.				
strongly disagree	109	31.1	335	33.0
disagree	172	49.0	437	43.1
agree	63	17.9	190	18.7
strongly agree	7	2.0	52	5.1
Total	351	100.0	1014	99.9
The wise person lives for today and lets tomorrow take care of itself.				
strongly disagree	159	45.2	431	42.7
disagree	134	38.1	411	40.7
agree	51	14.5	118	11.7
strongly agree	8	2.3	50	5.0
Total	352	100.1	1010	100.1
It is best to have a job as a part of an organization all working together, even if you do not get individual credit.				
strongly disagree	26	7.5	116	11.5
disagree	126	36.3	371	36.9
agree	156	45.0	428	42.6
strongly agree	39	11.2	90	9.0
Total	347	100.0	1005	100.0

risky job search environment. Thus, about 57 percent of the non-cooperative students but only about 45 percent of the cooperative students were ever in a situation where they even tried to get a job a lot different from the usual type of work they do. Of course, better career preparation of the cooperative students could substantially preclude the necessity of their having to seek jobs out of their chosen field.

The remainder of Table 30 deals with the attitudes of the study sample. Unfortunately, since we do not have a measure on these attitudes at the time the students entered high school, we cannot really tell how much change has occurred over time due to the cooperative program. Also, some of these statements represent ideological expressions of the protestant work ethic. As such, we cannot be sure of the degree to which these ideological positions translate themselves into behavior since there is no necessary correlation between the two. Yet, the gross differences in behavior and values do shed some insight on the differences between the two groups.

Compared to non-cooperative students, cooperative students were more likely to disagree or strongly disagree with the statement that "In his work, all a person should want is a secure, not too difficult job with enough pay for a nice car and a home"--80.1 percent versus 76.1 percent.

As a final example, only 3.7 percent of the cooperative students agreed or strongly agreed to the statement, "Planning only makes a person unhappy, since your plans hardly ever work out anyway." About 13 percent (12.7%) of the non-cooperative students agreed or strongly agreed with this statement. This would suggest that the cooperative program helps fulfill youthful expectations more often.

These responses suggest that cooperative vocational students are more likely to have positive attitudes about their job experiences and thus register a greater degree of job satisfaction--an important component of the net benefits to a job.

Relationship of Job to High School Curriculum: General Impressions. The relationship between the first and most recent job since leaving high school and the high school curriculum is summarized in the "Total" columns in Tables 31 and 32.[2] Several clearcut patterns emerge. For the first job after high school, only 26.6 percent of the cooperative students said that their high school curriculum was unrelated to their job, while fully 67.1 percent of the non-cooperative students saw no relation between job and curriculum. For both groups, males were more likely to assert this fact than females. Conversely, 72.7 percent of the cooperative group said that the curriculum was either "somewhat" or "highly" related to their job, while only 32.9 of the non-cooperative students gave these responses. From a third point of view, 39.5 percent of the cooperative students said that there was a high relation between job and curriculum while only 10.4 percent of the non-cooperative group made this claim. The ratio is almost four to one! A similar pattern exists for the most recent job since high school. These results certainly lend corroboration to the hypothesis that cooperative education is "relevant" to the job aspirations of its enrollees.

---

[2] Ideally, the respective Total columns in Tables 31 and 32 would be identical. However, lack of information on the ethnic origin of several cases causes slight discrepencies between the tables.

Relationship of Job to High School Curriculum with Respect to Sex. Table 31 also details the relationships discussed immediately above with respect to sex. Compared to their non-cooperative counterparts, cooperative males were five times and cooperative females three times more likely to say that their first job was highly related to their high school curriculum. This ratio dropped to about 3.5 for male cooperative students for the last job since leaving high school, but remained about the same for cooperative females. Females were more likely than males to be among those claiming a job highly related to high school curriculum whether one considers the first or the last job since leaving high school. For the last job since high school, the sex-specific ratios were almost identical between the two curriculum groups. The frequency of cooperative males that indicates the job is unrelated increases from first to last job while it decreases for non-cooperative males. The frequency of responses to the "unrelated" category decreases for both cooperative and non-cooperative females over time.

Relationship of Job to High School Curriculum Broken Down by Ethnic Origin. Compared to their non-cooperative counterparts, black and white cooperative students were, respectively, three and four times more likely to indicate that their first jobs were highly related to their high school curriculum. These two ratios were almost the same for the last job since leaving high school. (See Table 32.) But cooperative blacks were more likely than cooperative whites to claim that both the first and last jobs were unrelated to high school curriculum. For blacks, the percent rose over time. In contrast, non-cooperative blacks were less likely than their white counterparts to claim that the first or last job was unrelated. For those who responded that the first or last job was highly related, black non-cooperative students comprised a much higher proportion of their curriculum group than did black cooperative students, 30.2 versus 7.5 for first job and 32.7 versus 8.7 for last job, respectively. But among those who responded that the first or last job was unrelated, blacks made up a higher proportion in the non-cooperative group than they did in the cooperative group.

TABLE 31
RELATIONSHIP OF FIRST AND LAST JOB SINCE LEAVING HIGH SCHOOL TO HIGH SCHOOL CURRICULUM - BY SEX[a]

	Cooperative			Non-cooperative		
	Male	Female	Total	Male	Female	Total
First Job						
Unrelated	47	34	81	300	254	554
	58.0	42.0	100.0	54.2	45.8	100.0
	34.1	20.5	26.6	76.7	58.4	67.1
Somewhat Related	46	55	101	68	118	186
	45.5	54.5	100.0	36.6	63.4	100.0
	33.3	33.1	33.2	17.4	27.1	22.5
Highly Related	44	76	120	23	63	86
	36.7	63.3	100.0	26.7	73.3	100.0
	31.9	45.8	39.5	5.9	14.5	10.4
Not Ascertained	1	1	2	---	---	---
	50.0	50.0	100.0	---	---	---
	0.7	0.6	0.7	---	---	---
Total	138	166	304	391	435	826
	45.4	54.6	100.0	47.3	52.7	100.0
	100.0	100.0	100.0	100.0	100.0	100.0
Last Job						
Unrelated	54	28	82	276	239	515
	65.9	34.1	100.0	53.6	46.4	100.0
	37.5	16.5	26.1	67.0	53.5	60.0
Somewhat Related	49	55	104	104	139	243
	47.1	52.9	100.0	42.8	57.2	100.0
	34.0	32.4	33.1	25.2	31.1	28.3
Highly Related	41	86	127	32	69	101
	32.3	67.7	100.0	31.7	68.3	100.0
	28.5	50.6	40.4	7.8	15.4	11.8

TABLE 31

Relationship of First and Last Job since Leaving High School to High School Curriculum - By Sex[a] (continued)

	Cooperative			Non-cooperative		
	Male	Female	Total	Male	Female	Total
Not Ascertained	0 0.0 0.0	1 100.0 0.6	1 100.0 0.3	---	---	---
Total	144 45.8 100.0	170 54.2 100.1	314 100.0 99.9	412 48.0 100.0	447 52.0 100.0	859 100.0 100.1

Notes: a/ The numbers in each cell are the cell size, row percentage, and the column percentage.

Due to rounding, not all percentages sum to 100.0.

TABLE 32

RELATIONSHIP OF FIRST AND LAST JOB SINCE LEAVING HIGH SCHOOL TO HIGH SCHOOL CURRICULUM - BY ETHNIC ORIGIN[a/]

	Cooperative			Non-cooperative		
	Black & Other	White	Total	Black & Other	White	Total
First Job						
Unrelated	6 7.4 30.0	75 92.6 26.5	81 100.0 26.7	101 18.5 56.7	444 81.5 69.8	545 100.0 67.0
Somewhat Related	5 5.0 25.0	95 95.0 33.6	100 100.0 33.0	51 27.9 28.7	132 72.1 20.8	183 100.0 22.5
Highly Related	9 7.5 45.0	111 92.5 39.2	120 100.0 39.6	26 30.2 14.6	60 69.8 9.4	86 100.0 10.6
Not Ascertained	0 0.0 0.0	2 100.0 0.7	2 100.0 0.7	---	---	---
Total	20 6.6 100.0	283 93.4 100.0	303 100.0 100.0	178 21.9 100.0	636 78.1 100.0	814 100.0 100.1
Last Job						
Unrelated	7 8.5 33.3	75 91.5 25.7	82 100.0 26.2	96 19.0 52.5	410 81.0 61.7	506 100.0 59.7
Somewhat Related	3 2.9 14.3	100 97.1 34.2	103 100.0 32.9	54 22.5 29.5	186 77.5 28.0	240 100.0 28.3
Highly Related	11 8.7 52.4	116 91.3 39.7	127 100.0 40.6	33 32.7 18.0	68 67.3 10.2	101 100.0 11.9

TABLE 32

Relationship of First and Last Job Since Leaving High School to High School Curriculum - By Ethnic Origin[a] (continued)

	Cooperative			Non-cooperative		
	Black & Other	White	Total	Black & Other	White	Total
Not Ascertained	0 0.0 0.0	1 100.0 0.3	1 100.0 0.3	---	---	---
Total	21 6.7 100.0	292 93.3 99.9	313 100.0 100.0	183 21.6 100.0	664 78.4 99.9	847 100.0 99.9

Notes: a/ The numbers in each cell are the cell size, row percentage and the column percentage.

Due to rounding, not all percentages sum to 100.0.

Career Interests and Occupations. A second major measure of the impact of the high school curriculum upon student attitudes toward their jobs is the relationship between jobs and ultimate career goals. As in the previous section, some interesting patterns develop.

Career Interests and Occupation: General Impressions. The overall relationship between job and career interests is summarized for the cooperative and non-cooperative students in the respective Total columns in Tables 33 and 34.[3] As is evident in Table 33, 26.7 of the cooperative students said that the first job after high school did not fit at all into their career plans. This should be contrasted with the 52.9 percent of the non-cooperative students who said that their first job didn't fit in with their career interests--a ratio of two to one in favor of the cooperative program. Equivalently, about 73 percent of the cooperative students, in relation to their first job after high school, said that that job either "fit in moderately well" or "fit in very well" with their career objectives as opposed to about 47 percent of the non-cooperative group.

As might be expected, time mitigates these differentials as students have opportunities to change jobs and as career goals change. Nonetheless, examination of the data on last job held still shows that the cooperative students' jobs fit somewhat better into their career goals than do those of the non-cooperative students. Of course, one problem with these data is that the kids who enter the cooperative program may have had a stronger idea initially of what their career goals were and simply used the cooperative program as a vehicle for ultimately achieving these goals but not as a causative factor. That is, the program in itself may not necessarily help focus a students' career goals, or, at least, we have no firm evidence on this possible effect.

Career Interests and Occupation Broken Down by Sex. Cooperative males are about twice as likely as non-cooperative males to claim that their first job "fits in very well" with their overall career interests. This ratio is almost as great (41.0/22.9) when one compares cooperative and non-cooperative females on the first job. Over time, the students feel that the job more closely fits in with their overall career interests. (See Table 33.) While both cooperative males and females show increases (33.6 to 40.3 percent and 41.0 to 56.1 percent, respectively) in the percent of responses to "fits in very well," the non-cooperative males show somewhat greater proportionate gains when one compares the first with the last job.

---

[3] Ideally, the respective Total columns in Tables 33 and 34 would be identical. However, lack of information on the ethnic origin of several cases causes slight discrepencies between the tables.

TABLE 33
RELATIONSHIP OF FIRST AND LAST JOB SINCE LEAVING HIGH SCHOOL TO OVERALL CAREER INTERESTS - BY SEX[a]

	Cooperative			Non-cooperative		
	Male	Female	Total	Male	Female	Total
First Job						
Does Not Fit At All	45	36	81	227	204	431
	55.6	44.4	100.0	52.7	47.3	100.0
	32.8	21.7	26.7	59.9	46.8	52.9
Fits in Only Moderately Well	45	61	106	97	132	229
	42.5	57.5	100.0	42.4	57.6	100.0
	32.8	36.7	35.0	25.6	30.3	28.1
Fits in Very Well	46	68	114	55	100	155
	40.4	59.6	100.0	35.5	64.5	100.0
	33.6	41.0	37.6	14.5	22.9	19.0
Not Ascertained	1	1	2	---	---	---
	50.0	50.0	100.0			
	0.7	0.6	0.7			
Total	137	166	303	379	436	815
	45.2	54.8	100.0	46.5	53.5	100.0
	99.9	100.0	100.0	100.0	100.0	100.0
Last Job						
Does Not Fit At All	36	23	59	162	165	327
	61.0	39.0	100.0	49.5	50.5	100.0
	25.0	13.5	18.7	39.8	36.7	38.2
Fits In Only Moderately Well	50	51	101	145	131	276
	49.5	50.5	100.0	52.5	47.5	100.0
	34.7	29.8	32.1	35.6	29.1	32.2
Fits In Very Well	58	96	154	100	154	254
	37.7	62.3	100.0	39.4	60.6	100.0
	40.3	56.1	48.9	24.6	34.2	29.6

TABLE 33

Relationship of First and Last Job Since Leaving High School to Overall Career Interests - By Sex[a] (continued)

	Cooperative			Non-cooperative		
	Male	Female	Total	Male	Female	Total
Not ascertained	0 0.0 0.0	1 100.0 0.6	1 100.0 0.3	---	---	---
Total	144 45.7 100.0	171 54.3 100.0	315 100.0 100.0	407 47.5 100.0	450 52.5 100.0	857 100.0 100.0

Notes: a/ The numbers in each cell are the cell size, row percentage and column percentage.

Due to rounding, not all percentages sum to 100.0.

TABLE 34

RELATIONSHIP OF FIRST AND LAST JOB SINCE LEAVING HIGH SCHOOL TO OVERALL CAREER INTERESTS - BY ETHNIC ORIGIN[a]

	Cooperative			Non-cooperative		
	Black & Other	White	Total	Black & Other	White	Total
First Job						
Does Not Fit At All	7	74	81	84	340	424
	8.6	91.4	100.0	19.8	80.2	100.0
	35.0	26.2	26.8	47.2	54.4	52.8
Fits In Only Moderately Well	8	97	105	57	168	225
	7.6	92.4	100.0	25.3	74.7	100.0
	40.0	34.4	34.8	32.0	26.9	28.0
Fits In Very Well	5	109	114	37	117	154
	4.4	95.6	100.0	24.0	76.0	100.0
	25.0	38.7	37.7	20.8	18.7	19.2
Not Ascertained	0	2	2			
	0.0	100.0	100.0	---	---	---
	0.0	0.7	0.7			
Total	20	282	302	178	625	803
	6.6	93.4	100.0	22.2	77.8	100.0
	100.0	100.0	100.0	100.0	100.0	100.0
Last Job						
Does Not Fit In At All	7	52	59	77	243	320
	11.9	88.1	100.0	24.1	75.9	100.0
	33.3	17.7	18.8	41.8	36.8	37.9
Fits In Only Moderately Well	6	94	100	53	220	273
	6.0	94.0	100.0	19.4	80.6	100.0
	28.6	32.1	31.8	28.8	33.3	32.3
Fits In Very Well	8	146	154	54	198	252
	5.2	94.8	100.0	21.4	78.6	100.0
	38.1	49.8	49.0	29.3	30.0	29.8

TABLE 34

Relationship of First and Last Job Since Leaving High School to Overall Career Interests - By Ethnic Origin[a] (continued)

	Cooperative			Non-cooperative		
	Black & Other	White	Total	Black & Other	White	Total
Not Ascertained	0 0.0 0.0	1 100.0 0.3	1 100.0 0.3	---	---	---
Total	21 6.7 100.0	293 93.3 99.9	314 100.0 99.9	184 21.8 99.9	661 78.2 100.1	845 100.0 100.0

Notes: [a] The numbers in each cell are the cell size, row percentage and column percentage.

Due to rounding, not all percentages sum to 100.0.

Likewise, the percentage of non-cooperative males who say the job does not "fit in at all" drops from 59.9 percent on the first job to 39.8 on the last job. This contrasts with a 32.8 percent to 25.0 percent drop for cooperative males.

For the last job, non-cooperative males and females comprised equal proportions of those who said the job "does not fit in at all," but males comprised 61.0 percent of the cooperative students making this response. Likewise, among those cooperative students who responded that their job "fits in very well," only 37.7 percent were male, and this pattern was similar for the non-cooperative group.

Career Interests and Occupation Broken Down by Ethnic Origin. Among the cooperative students, blacks were less likely than whites to say that the first job "fit in very well" with their overall career interests, 25.0 versus 38.7 percent, respectively. These respective percents rose to 38.1 and 49.8 on the last job, so cooperative blacks made the greater relative improvement over time. The differences between black and white are not nearly so great for the non-cooperative group, 20.8 versus 18.7 percent, respectively, on the first job and 29.3 versus 30.0 percent, respectively, on the last job. Thus, the cooperative program was less likely to fulfill the career objectives of blacks relative to whites compared to the non-cooperative program. (Table 34.) This is also apparent when one notes that among those cooperative students who claim the first job fits in very well, only 4.4 percent are black, while blacks comprise 8.6 percent of the cooperative group which says the first job does not fit in at all. These figures are similar for the last job since leaving high school.

Finally, among those cooperative and non-cooperative students who say the first and last job "does not fit in at all," whites display a greater absolute shift out of this category from the first to the last job than do blacks. For cooperative and non-cooperative whites, the respective first/last job shifts are 26.2/17.7 percent and 54.4/36.8 percent. In contrast, the respective black cooperative and non-cooperative first job/last job shifts are 35.0/33.3 percent and 47.2/41.8 percent. Thus, for blacks compared to whites, the overall picture is one of an overall lower relationship between one's job and one's long-run career interests.

D. Summary

The general argument of this chapter has been that both in terms of attitudes and relevance, the cooperative students are generally much happier with their high school education than are the non-cooperative students. This, of course, is a major program impact. It implies that cooperative students are generally more content with their jobs and thus may be more productive, at least in the first several years following high school, than their non-cooperative counterparts. In non-monetary terms, it implies that the cooperative students may gain greater utility (through greater job satisfaction) from their education than do the non-cooperative students. However, it is important to stress that we cannot ascertain the extent to which the cooperative program, itself, on net, caused this greater job satisfaction, etc. Students with clearcut career interests and a knowledgeable approach to fulfilling these may tend to gravitate to the cooperative program more.

CHAPTER 5

LABOR MARKET IMPACT OF THE COOPERATIVE VOCATIONAL EDUCATION PROGRAM

A. Introduction

In this chapter we examine the labor market experiences of the cooperative and non-cooperative students. The analysis is divided into two parts: first, we examine the labor market experiences of the two groups of students while they are still in high school. Such comparisons will provide insight to the experiences they will likely have after leaving high school. Second, we discuss the post-high school labor market environment in an effort to ascertain the gross effects of cooperative vocational education on wages and employment.

Two points should be borne in mind by the reader. First, as we mentioned in Chapter 3, differentials in wage rates, for example, may neither support nor deny an hypothesis regarding the impact of cooperative vocational education *vis-a-vis* the non-cooperative curricula. Wage rate differentials may reflect the fact that the cooperative and non-cooperative groups actually come from two different populations. Also, as we have already argued, rates of return to education calculated solely on the basis of wage rates may ignore substantial non-pecuniary benefits accruing to the subjects of the analysis.

Second, we continue our practice - although this is the final chapter in which we shall do so - of ignoring the standard deviations of the relevant variables. Nevertheless, the discussion herein will provide as clear a picture as possible of the major issues of the study prior to the use of our regression models.

B. High School Labor Market Experience

Employment While Attending High School. Since the cooperative education program is designed as a career-oriented educational program, we expect to find cooperative students with more employment experience and earning higher wages while attending high school. The issue here is mainly one of relative magnitudes. We begin by examining available employment data.

Table 35 summarizes the total months of employment while attending high school. The data are striking. On the average, cooperative students are employed 21.3 months while in high school while non-cooperative students are employed an average of only 7.7 months. In the various breakdowns of the cooperative and non-cooperative groups by sex, ethnic origin and class cohort, the cooperative groups were employed at least twice as many months as their respective non-cooperative groups.

TABLE 35
TOTAL MONTHS OF EMPLOYMENT WHILE ATTENDING HIGH SCHOOL, STUDY SAMPLE a/

		Cooperative	Non-cooperative
Total Sample	m	21.3	7.7
	sd	(7.9)	(11.4)
	n	350	998
Males	m	21.1	10.3
	sd	(8.2)	(13.3)
	n	154	458
Females	m	21.5	5.5
	sd	(7.6)	(9.0)
	n	196	540
Whites	m	21.1	8.3
	sd	(7.6)	(12.0)
	n	324	745
Blacks & Others	m	23.6	6.0
	sd	(10.6)	(9.4)
	n	25	239
White Males	m	21.1	10.8
	sd	(8.3)	(13.8)
	n	142	365
Black & Other Males	m	21.3	8.2
	sd	(7.7)	(11.5)
	n	11	85
White Females	m	21.2	5.9
	sd	(7.0)	(9.4)
	n	182	380
Black & Other Females	m	25.5	4.8
	sd	(12.4)	(7.8)
	n	14	154

TABLE 35

Total Months of Employment While Attending High School, Study Sample a/ (continued)

		Cooperative	Non-cooperative
1966 Cohort	m	20.1	7.0
	sd	(8.4)	(11.3)
	n	187	436
1970 Cohort	m	22.8	8.3
	sd	(6.9)	(11.5)
	n	163	562

Notes: a/ m = cell mean
sd = standard deviation of the cell mean
n = number of observations in the cell

Among the cooperative groups, blacks fared well in terms of high school employment, with an average of 23.6 months of employment; among the non-cooperative groups, the opposite result is obtained, where blacks as a group fared relatively poorly in terms of employment, averaging only 6.0 months of employment.

Table 36 compares cooperative students with the various curricula of the non-cooperative group. Cooperative students again more than double, in most cases, the employment time of the students in the academic, general and vocational curricula.

Employment data for the senior year in high school, when it may be that the impact of the high school education upon career choices is a maximum, reinforces the above results: namely, cooperative students during their senior year were employed more than twice as long as their non-cooperative counterparts. These results, for the total sample and the sample broken down by sex and ethnic origin are shown in Table 37.

Not only did cooperative students work more months than their non-cooperative counterparts while in high school, their average hours per week on the job were also longer. Table 38 shows that as a group, cooperative students were employed approximately half time while in high school--19.5 hours per week. Non-cooperative students, on the other hand, were employed about 14 hours per week while working--from 13.2 hours per week for academic curriculum students to 15.3 for vocational students. These data coupled with the information from Table 37 on months employed while a senior in high school, may at least partially explain the drop in grade averages as between freshman and senior years that we reported in Chapter Three. Of course, it also represents different quantities of on-the-job ing and experience which the two groups bring to the labor market once they leave high school. Thus, a relative drop in GPA could be compensated for by a rise in skills learned on-the-job. There is nothing inconsistent in this possible trade off from a human capital standpoint.

Wage rates. Tables 39 and 40 illustrate the wage rate data available on the cooperative and non-cooperative groups. As can be seen from Table 39, the average wage for all jobs while in high school for cooperative students is $1.75 as opposed to $.89 for non-cooperative students. When the cooperative and non-cooperative groups are broken down by sex, ethnic origin, and class cohort, similar wage differentials continue to exist in all categories.

The reason, we suspect, for these marked differentials is the fact that cooperative students tend to gain employment in higher paying industries than the non-cooperative students. (See Table 41.) Presumably, the ability to gain higher paying jobs is at least partially attributable to

Among the cooperative groups, blacks fared well in terms of high school employment, with an average of 23.6 months of employment; among the non-cooperative groups, the opposite result is obtained, where blacks as a group fared relatively poorly in terms of employment, averaging only 6.0 months of employment.

Table 36 compares cooperative students with the various curricula of the non-cooperative group. Cooperative students again more than double, in most cases, the employment time of the students in the academic, general and vocational curricula.

Employment data for the senior year in high school, when it may be that the impact of the high school education upon career choices is a maximum, reinforces the above results: namely, cooperative students during their senior year were employed more than twice as long as their non-cooperative counterparts. These results, for the total sample and the sample broken down by sex and ethnic origin are shown in Table 37.

Not only did cooperative students work more months than their non-cooperative counterparts while in high school, their average hours per week on the job were also longer. Table 38 shows that as a group, cooperative students were employed approximately half time while in high school--19.5 hours per week. Non-cooperative students, on the other hand, were employed about 14 hours per week while working--from 13.2 hours per week for academic curriculum students to 15.3 for vocational students. These data coupled with the information from Table 37 on months employed while a senior in high school, may at least partially explain the drop in grade averages as between freshman and senior years that we reported in Chapter Three. Of course, it also represents different quantities of on-the-job training and experience which the two groups bring to the labor market once they leave high school. Thus, a relative drop in GPA could be compensated for by a rise in skills learned on-the-job. There is nothing inconsistent in this possible trade off from a human capital standpoint.

Wage rates. Tables 39 and 40 illustrate the wage rate data available on the cooperative and non-cooperative groups. As can be seen from Table 39, the average wage for all jobs while in high school for cooperative students is $1.75 as opposed to $.89 for non-cooperative students. When the cooperative and non-cooperative groups are broken down by sex, ethnic origin, and class cohort, similar wage differentials continue to exist in all categories.

The reason, we suspect, for these marked differentials is the fact that cooperative students tend to gain employment in higher paying industries than the non-cooperative students. (See Table 41.) Presumably, the ability to gain higher paying jobs is at least partially attributable to

TABLE 36
TOTAL NUMBER OF MONTHS EMPLOYED WHILE ATTENDING HIGH SCHOOL[a/]

		Cooperative	Non-cooperative		
			Academic	General	Vocational
Total	m	21.3	8.8	6.6	7.7
	sd	(7.9)	(12.4)	(10.4)	(11.3)
	n	350	368	275	328
Males	m	21.1	11.7	8.7	10.2
	sd	(8.2)	(14.7)	(11.6)	(12.9)
	n	160	185	120	164
Females	m	21.5	6.0	5.2	5.5
	sd	(7.6)	(8.7)	(9.1)	(9.2)
	n	199	192	182	183
Blacks & Others	m	23.6	7.6	5.8	5.4
	sd	(10.6)	(11.2)	(9.9)	(7.6)
	n	25	60	83	88
Whites	m	21.1	9.1	7.0	8.6
	sd	(7.6)	(12.6)	(10.5)	(12.4)
	n	324	305	188	233

Notes: a/ m = cell mean
sd = cell standard deviation
n = cell size

TABLE 37
TOTAL NUMBER OF MONTHS EMPLOYED WHILE A SENIOR IN HIGH SCHOOL, STUDY SAMPLE[a/]

		Cooperative	Non-cooperative		
			Academic	General	Vocational
Total	m	8.3	3.3	2.1	3.1
	sd	(2.6)	(4.1)	(3.5)	(4.0)
	n	349	368	282	335
Males	m	8.4	3.9	2.7	3.8
	sd	(3.0)	(4.2)	(3.9)	(4.0)
	n	154	181	113	157
Females	m	8.3	2.7	1.6	2.5
	sd	(2.3)	(3.9)	(3.1)	(3.8)
	n	195	187	169	178
Blacks & Others	m	7.9	2.7	1.7	2.4
	sd	(3.0)	(3.9)	(3.3)	(3.6)
	n	25	59	84	90
Whites	m	8.4	3.4	2.3	3.4
	sd	(2.6)	(4.1)	(3.6)	(4.1)
	n	323	306	194	238

Notes: a/ m = cell mean
sd = cell standard deviation
n = cell size

TABLE 38
AVERAGE HOURS WORKED PER WEEK ON ALL JOBS HELD WHILE IN HIGH SCHOOL[a/]

		Cooperative	Non-cooperative		
			Academic	General	Vocational
Total	m	19.5	13.2	13.4	15.3
	sd	(6.2)	(14.8)	(15.4)	(16.8)
	n	352	367	286	336
Males	m	20.5	15.8	16.1	20.1
	sd	(7.6)	(16.0)	(16.3)	(17.3)
	n	157	178	118	158
Females	m	18.7	10.8	11.5	11.0
	sd	(4.7)	(13.2)	(14.5)	(15.1)
	n	195	189	168	178
Blacks & Others	m	19.9	11.9	13.8	15.0
	sd	(7.7)	(13.5)	(16.0)	(1.68)
	n	26	60	85	88
Whites	m	19.5	13.6	13.4	15.4
	sd	(6.1)	(15.1)	(15.2)	(16.9)
	n	325	304	197	241

Notes: a/ m = cell mean
sd = cell standard deviation
n = cell size

TABLE 39
AVERAGE HOURLY WAGE RATE: ALL JOBS WHILE ATTENDING HIGH SCHOOL, STUDY SAMPLE

		Cooperative	Non-cooperative
Total Sample	m	1.75	0.89
	sd	(0.72)	(1.01)
	n	342	1025
Males	m	1.84	1.07
	sd	(0.79)	(1.10)
	n	153	470
Females	m	1.67	0.73
	sd	(0.65)	(0.90)
	n	189	555
Whites	m	1.73	0.90
	sd	(0.71)	(1.05)
	n	315	764
Blacks & Others	m	1.99	0.86
	sd	(0.82)	(0.87)
	n	26	246
White Males	m	1.81	1.10
	sd	(0.75)	(1.13)
	n	140	376
Black & Other Males	m	2.31	0.98
	sd	(1.10)	(0.90)
	n	12	85
White Females	m	1.66	0.70
	sd	(0.67)	(0.93)
	n	175	388
Black & Other Females	m	1.71	0.79
	sd	(0.33)	(0.84)
	n	14	161

TABLE 39

Average Hourly Wage Rate: All Jobs
While Attending High School, Study Sample (continued)

		Cooperative	Non-cooperative
1966 Cohort	m	1.50	0.73
	sd	(0.70)	(0.88)
	n	179	444
1970 Cohort	m	2.[illegible]	1.00
	sd	(0.66)	(1.09)
	n	163	581

Notes: m = cell mean
sd = standard of the cell mean
n = number of observations in the cell

TABLE 40
AVERAGE HOURLY WAGE RATE: ALL JOBS WHILE ATTENDING HIGH SCHOOL[a/]

		Cooperative	Non-cooperative		
			Academic	General	Vocational
Total	m	1.75	0.91	0.83	0.93
	sd	(0.72)	(1.04)	(1.00)	(1.02)
	n	342	367	286	342
Males	m	1.84	1.04	0.94	1.23
	sd	(0.79)	(1.20)	(1.02)	(1.14)
	n	153	177	116	161
Females	m	1.67	0.78	0.76	0.68
	sd	(0.65)	(0.94)	(0.98)	(0.82)
	n	189	190	170	182
Blacks & Others	m	2.00	0.84	0.82	0.94
	sd	(0.82)	(0.87)	(0.87)	(0.87)
	n	26	60	85	93
Whites	m	1.76	0.93	0.84	0.92
	sd	(0.71)	(1.07)	(1.05)	(1.05)
	n	315	304	197	243

Notes: a/ m = cell mean
sd = cell standard deviation
n = cell size

TABLE 41
JOB AND INDUSTRY OF EMPLOYMENT
EXPERIENCE DURING SENIOR YEAR IN HIGH SCHOOL

	Cooperative		Non-cooperative	
	n	%	n	%
Job:				
Professional, technical workers	28	8.6	9	2.2
Farmer	0	0.0	1	0.2
Managers, officials, proprietors	1	0.3	0	0.0
Clerical	181	55.3	126	31.2
Sales	17	5.2	81	20.0
Craftsmen, foremen (skilled)	32	9.8	10	2.5
Operatives (semi-skilled)	20	6.1	39	9.7
Private household workers	0	0.0	1	0.2
Laborers	6	1.8	46	11.4
Service (except private household)	42	12.9	91	22.6
Total	327	100.0	404	100.0
Industry:				
Agriculture	0	0.0	3	1.0
Mining	0	0.0	1	0.3
Transportation	0	0.0	4	1.3
Manufacturing (durable)	137	58.0	18	5.8
Manufacturing (non-durable)	17	7.2	14	4.5
Government (excluding education)	0	0.0	0	0.0
Education	9	3.8	9	2.9
Construction	1	0.4	6	1.9
Communication	2	0.8	6	1.9
Public utilities	13	5.5	1	0.3
Trade (wholesale and retail)	57	24.3	251	80.1
Total	236	100.0	313	100.0

Notes: Not ascertained responses are not shown in the estimations.

the cooperative education program. An important question is whether these differential wage rates reflect only differences in worker productivity at the time the student leaves high school. We think this is unlikely. In part the wage difference does reflect differences in productivity. However, it may also reflect differences in information about job opportunities. The staff at Patterson Cooperative may simply have a better grasp of the labor market than the comparable staff at other high schools in the school system and pass this advantage on to their students. Finally, employers may discriminate in favor of cooperative students, though for very justifiable reasons--namely, they feel the cooperative student is attempting to learn a skill and may be a prospective employee. Also, employers may recognize that Patterson Cooperative performs a valuable screening and selection function at no cost to them, hence Patterson students may tend to be at the head of the employment queue for these employers.

Summary. We have found in this section that cooperative students tend to be employed more months while in high school as well as more months during the senior year than their non-cooperative classmates. Likewise, they work longer average hours when employed. Further, cooperative students tend to earn higher wages. However, the reader is cautioned against drawing conclusions at this point. As before, it may simply be that more ambitious or labor market oriented students are enrolled in the cooperative program and that they would have out-performed their classmates in this regard in almost any environment. However, the differences do point out a substantial variation in on-the-job training between the cooperative and non-cooperative groups. More detailed analysis must await the regression models, where these variables are used to help control for the impact of experience not related to the cooperative program.

C. Post-High School Labor Market Experiences

As a conclusion to our descriptive analysis, we examine the post-high school labor market experiences of the students in the cooperative and non-cooperative groups. It is irrelevant to discuss such variables as "total months employed since leaving high school" in terms of the cooperative and non-cooperative groups except as they are members of the 1966 and 1970 cohorts, for the members of the 1966 cohort have been in the labor market up to four years more than the members of the 1970 cohort. Thus in this section we break the two groups into cohorts.

Employment Experiences. Before one can discuss the actual employment and unemployment behavior of the study sample, it is necessary to describe the labor force participation behavior of the sample. Table 42 details the labor force participation rates by cohort, sex and ethnic origin. These are civilian labor force participation rates which net out any time spent

TABLE 42
CIVILIAN LABOR FORCE PARTICIPATION RATES OF THE STUDY SAMPLE SINCE LEAVING HIGH SCHOOL, BY COHORT, SEX AND ETHNIC ORIGIN[1]

	Cooperative		Non-cooperative	
	1966	1970	1966	1970
Total	78.4	75.0	64.4	62.6
Males	87.1	80.3	70.6	63.8
Females	72.7	72.1	59.3	62.9
Whites	78.8	76.8	62.5	61.2
Blacks & Others	72.0	63.8	74.4	68.5

Note: 1/ These civilian labor force participation rates are based on the data shown in Appendix Table D-38. "Not ascertained" time is subtracted from the denominator of "total time available for the civilian labor force." Definitions of labor force participation conform to those used in the Current Population Survey of the Census Bureau.

in the military labor force. Also, the use of some of the time since the students left high school was not ascertained. This not ascertained time is subtracted from the total time one has available to be in the civilian labor force. This will have the tendency to bias the labor force participation rates somewhat upward.

The estimated rates are interesting. First, it is clear that, relative to the 1966 cohort, the 1970 cohort is still spending considerable time in full time schooling. The labor force participation rates of the 1970 cohort are several points lower than those for 1966. The differences are greatest for both cooperative and non-cooperative males and blacks and others. Also, cooperative students have much higher labor force participation rates than non-cooperative students. However, when one compares the 1970 and 1966 cohorts within curricula, the patterns are about the same. The labor force participation rate of cooperative students is 3.4 points lower in 1970 vis-a-vis 1966. For non-cooperative students it is 1.8 points lower. For cooperative males, the difference between the two cohorts is 6.8 points while for non-cooperative males, it is 7.2 points. Thus, as we expect, the labor force participation rates of cooperative students is higher than that of non-cooperative students, while it is higher for the 1966 cohort compared to 1970 and lower for females and blacks compared to males and whites.

Table 43 details the data on the total months employed since leaving high school. As can be seen by inspection of the table, the cooperative students in the two cohorts have on the average more employment after high school than the respective non-cooperative students. Conversely, as is seen in Table 44, cooperative students in a given cohort generally have fewer months of unemployment after high school than do non-cooperative students in the same cohort. As we have emphasized all along, this may or may not be a program impact. Since the cooperative and non-cooperative students are presumably from different populations, it may be simply that the cooperative students are more ambitious in searching for employment. We suspect that this effect is present to some extent but that the differences also are partially attributable to program impacts per se.

A third variable, which contains the same type of ambiguity, is shown in Table 45, where we show the total months elapsed between leaving high school and acquiring the first job lasting one month or longer. (The reader comparing these data with the unemployment data just presented should be reminded that there is a distinction between being unemployed and not being in the labor force. One cannot be unemployed unless he is in the labor force. Non-labor force activity is not unemployment.) It is not inconsistent to find the months elapsed before acquiring the first job as greater than the reported months unemployed after high school. As can be seen, the cooperative students in a particular cohort generally

TABLE 43
TOTAL MONTHS EMPLOYED SINCE LEAVING HIGH SCHOOL, STUDY SAMPLE

		1966 Cohort		1970 Cohort	
		Cooperative	Non-Cooperative	Cooperative	Non-Cooperative
Males	m	42.1	33.4	10.5	8.9
	sd	(22.5)	(22.6)	(7.3)	(7.9)
	n	88	241	73	246
Females	m	43.0	32.5	9.6	7.8
	sd	(19.2)	(21.0)	(6.6)	(7.9)
	n	104	217	95	342
Whites	m	42.5	32.7	9.8	9.4
	sd	(20.7)	(21.7)	(6.5)	(8.3)
	n	187	364	115	320
Blacks & Others	m	44.4	38.4	9.3	5.6
	sd	(24.7)	(21.8)	(6.5)	(6.3)
	n	5	61	21	158

Notes: m = cell mean
sd = cell standard deviation
n = cell size

TABLE 44
TOTAL MONTHS UNEMPLOYED SINCE LEAVING HIGH SCHOOL, STUDY SAMPLE

		1966 Cohort		1970 Cohort	
		Cooperative	Non-Cooperative	Cooperative	Non-Cooperative
Males	m	1.2	2.5	1.6	2.2
	sd	(2.8)	(6.7)	(3.0)	(4.6)
	n	88	242	73	248
Females	m	0.7	3.2	1.9	3.2
	sd	(2.7)	(8.3)	(4.2)	(5.8)
	n	104	216	95	343
Whites	m	0.9	2.3	2.1	2.1
	sd	(2.7)	(6.8)	(4.2)	(4.0)
	n	187	365	115	320
Blacks & Others	m	2.0	4.0	1.2	4.9
	sd	(4.5)	(6.7)	(2.9)	(6.6)
	n	5	61	21	159
1966 Cohort	m	0.9	2.9		
	sd	(2.7)	(7.5)		
	n	192	458		
1970 Cohort	m			1.8	2.8
	sd			(3.7)	(5.3)
	n			168	591

Notes: m = cell mean
sd = cell standard deviation
n = cell size

TABLE 45

MONTHS ELAPSED BETWEEN LEAVING HIGH SCHOOL AND ACQUIRING FIRST JOB LASTING ONE MONTH OR LONGER, STUDY SAMPLE

		1966 Cohort		1970 Cohort	
		Cooperative	Non-Cooperative	Cooperative	Non-Cooperative
Males	m	9.1	11.4	2.4	3.8
	sd	(16.6)	(16.7)	(4.2)	(5.9)
	n	84	223	63	192
Females	m	8.3	11.8	2.1	4.6
	sd	(13.4)	(15.5)	(3.5)	(6.0)
	n	99	195	75	260
Whites	m	8.8	10.9	2.1	4.1
	sd	(15.0)	(15.5)	(4.1)	(5.6)
	n	179	328	95	262
Blacks & Others	m	1.2	11.2	2.6	4.2
	sd	(1.5)	(15.4)	(3.9)	(5.3)
	n	4	59	17	105
1966 Cohort	m	8.6	11.6	---	---
	sd	(14.9)	(16.1)		
	n	183	418		
1970 Cohort	m	---	---	2.2	4.3
	sd			(3.9)	(6.0)
	n			138	452

Notes: m = cell mean
sd = cell standard deviation
n = cell size

have fewer months between graduation and obtaining the first job lasting one month as compared with the non-cooperative students. From an economic standpoint, this implies fewer job search costs and, thus, other things equal, a higher return on one's educational investment. One should note that part of the higher cost of the cooperative curriculum is compensated for by the fact that job search costs are lower and additional direct educational outlays necessary for one to achieve his ultimate occupational goal may be less than for, say, the academic curriculum.

Finally, we find that for the first job after leaving high school, the longest job since leaving high school, and the last or most recent job since leaving high school, cooperative students in a given cohort tend to stay in that job longer than do their non-cooperative counterparts. (See Tables 46, 47 and 48.) This result is not at all surprising in light of the discussion of attitudes toward jobs in the preceeding chapter. However, the data is clouded to some extent by the fact that the same job for a given student can be included in all three categories ("first," "last" and "longest").

Wage Data. Tables 49, 50 and 51 show the relevant wage rates for the first, last and longest job after high school. Again, if the student has had only one job after high school, his wage for that job is included in all three tables. Despite this definitional problem, these tables do suggest a pattern in which the hourly wage rate of the cooperative students in a given cohort generally exceeds the wage rates of the non-cooperative students in the same cohort.

In terms of improvement in a person's general economic welfare, wage rate measures are one of the best indices, since an increase in the wage rate, hours of work unchanged, leads to an unambiguous increase in income. In contrast, we may find that non-cooperative students may earn more per month, but this may be due not to a higher wage rate but to working more hours per day or days per week or month. Thus, we see that the cooperative vocational education program does lead to an unambiguous increase in a person's economic welfare as measured in monetary terms. As before, though, it is difficult to ascribe all of these positive differentials entirely to program effects. The regression models to follow will help us approximate net program effects, however.

D. Summary

This chapter essentially completes our descriptive analysis of the cooperative education program. We hope that the basic issues of the study are clear, and on the assumption that they are, we proceed to the more formal regression models. In particular we wish to determine if these apparent positive impacts of the cooperative vocational program continue

TABLE 46
TOTAL MONTHS EMPLOYED AFTER HIGH SCHOOL, FIRST JOB, STUDY SAMPLE

		1966 Cohort		1970 Cohort	
		Cooperative	Non-Cooperative	Cooperative	Non-Cooperative
Males	m	24.9	13.7	8.5	6.3
	sd	(21.3)	(17.9)	(6.6)	(6.9)
	n	87	235	72	241
Females	m	24.6	13.8	7.5	5.7
	sd	(19.9)	(16.8)	(6.5)	(7.0)
	n	103	211	95	340
Whites	m	24.9	13.9	8.0	6.5
	sd	(20.4)	(17.7)	(6.6)	(7.3)
	n	185	353	115	316
Blacks & Others	m	19.8	14.6	6.2	4.1
	sd	(25.7)	(17.4)	(5.8)	(5.3)
	n	5	60	21	156
1966 Cohort	m	24.7	13.8	---	---
	sd	(20.5)	(17.4)		
	n	190	446		
1970 Cohort	m	---	---	7.9	5.9
	sd			(6.5)	(7.0)
	n			157	581

Notes: m = cell mean
sd = cell standard deviation
n = cell size

TABLE 47
TOTAL MONTHS EMPLOYED AFTER HIGH SCHOOL, LAST JOB, STUDY SAMPLE

		1966 Cohort		1970 Cohort	
		Cooperative	Non-Cooperative	Cooperative	Non-Cooperative
Males	m	25.3	19.5	9.4	6.5
	sd	(22.5)	(20.0)	(6.9)	(6.9)
	n	87	237	72	243
Females	m	25.6	17.0	8.3	5.9
	sd	(19.8)	(18.0)	(6.3)	(6.9)
	n	103	213	95	339
Whites	m	25.4	18.0	8.9	6.6
	sd	(20.8)	(19.3)	(6.0)	(7.2)
	n	185	358	115	317
Blacks & Others	m	29.0	22.9	7.0	4.2
	sd	(31.3)	(19.3)	(6.0)	(7.2)
	n	5	59	21	155
1966 Cohort	m	25.5	18.4	---	---
	sd	(21.0)	(19.1)		
	n	190	450		
1970 Cohort	m	---	---	8.7	6.1
	sd			(6.6)	(6.9)
	n			167	582

Notes: m = cell mean
sd = cell standard deviation
n = cell size

TABLE 48
TOTAL MONTHS EMPLOYED AFTER HIGH SCHOOL, LONGEST JOB, STUDY SAMPLE

		1966 Cohort		1970 Cohort	
		Cooperative	Non-Cooperative	Cooperative	Non-Cooperative
Males	m	31.7	23.6	9.2	7.3
	sd	(20.8)	(19.5)	(6.4)	(7.0)
	n	87	234	72	242
Females	m	30.9	22.4	8.6	6.6
	sd	(17.8)	(17.7)	(6.3)	(7.3)
	n	103	210	95	339
Whites	m	31.1	22.9	9.0	7.8
	sd	(19.0)	(18.7)	(6.4)	(7.6)
	n	185	352	115	316
Blacks & Others	m	35.4	27.7	7.0	4.5
	sd	(27.1)	(18.7)	(5.6)	(5.4)
	n	5	59	21	155
1966 Cohort	m	31.2	23.1	---	---
	sd	(19.2)	(18.6)		
	n	190	444		
1970 Cohort	m	---	---	8.8	6.9
	sd			(6.3)	(7.2)
	n			167	581

Notes: m = cell mean
sd = cell standard deviation
n = cell size

TABLE 49
HOURLY RATE OF PAY AFTER HIGH SCHOOL, FIRST JOB, STUDY SAMPLE

		1966 Cohort		1970 Cohort	
		Cooperative	Non-Cooperative	Cooperative	Non-Cooperative
Males	m	3.04	2.34	2.32	1.91
	sd	(1.40)	(1.20)	(1.20)	(1.32)
	n	84	234	73	236
Females	m	2.22	1.85	1.79	1.43
	sd	(0.90)	(1.00)	(1.10)	(1.00)
	n	98	204	94	336
Whites	m	2.59	2.08	2.00	1.65
	sd	(1.21)	(1.10)	(1.15)	(1.00)
	n	178	347	114	309
Blacks & Others	m	2.80	2.29	2.18	1.49
	sd	(1.04)	(1.25)	(1.40)	(1.20)
	n	4	58	21	155
1966 Cohort	m	2.69	2.11	---	---
	sd	(1.23)	(1.14)		
	n	182	438		
1970 Cohort	m	---	---	2.02	1.63
	sd			(1.19)	(1.15)
	n			167	572

Notes: m = cell mean
sd = cell standard deviation
n = cell size

TABLE 50
HOURLY RATE OF PAY AFTER HIGH SCHOOL, LAST JOB, STUDY SAMPLE

		1966 Cohort		1970 Cohort	
		Cooperative	Non-Cooperative	Cooperative	Non-Cooperative
Males	m	3.57	3.32	2.45	2.00
	sd	(1.30)	(1.50)	(1.50)	(1.40)
	n	84	230	72	240
Females	m	2.73	2.60	1.85	1.51
	sd	(1.20)	(1.21)	(1.10)	(1.00)
	n	100	212	95	334
Whites	m	3.13	2.94	2.09	1.74
	sd	(1.34)	(1.40)	(1.28)	(1.09)
	n	179	350	114	311
Blacks & Others	m	2.40	3.34	2.49	1.53
	sd	(0.70)	(1.31)	(1.50)	(1.20)
	n	5	58	21	156
1966 Cohort	m	3.11	2.97	---	---
	sd	(1.31)	(1.40)		
	n	184	442		
1970 Cohort	m	---	---	2.11	1.71
	sd			(1.29)	(1.20)
	n			167	574

Notes: m = cell mean
sd = standard deviation
n = cell size

TABLE 51
HOURLY RATE OF PAY AFTER HIGH SCHOOL, LONGEST JOB, STUDY SAMPLE

		1966 Cohort		1970 Cohort	
		Cooperative	Non-Cooperative	Cooperative	Non-Cooperative
Males	m	3.40	3.09	2.39	1.96
	sd	(1.40)	(1.40)	(1.30)	(1.41)
Females	m	2.56	2.35	1.87	1.47
	sd	(1.17)	(1.10)	(1.10)	(1.00)
	n	100	209	94	331
Whites	m	2.95	2.68	2.07	1.70
	sd	(1.30)	(1.30)	(1.20)	(1.04)
	n	179	346	133	308
Blacks & Others	m	2.78	3.07	2.35	1.51
	sd	(1.17)	(1.24)	(1.30)	(1.20)
	n	5	57	21	155
1966 Cohort	m	2.94	2.73	---	---
	sd	(1.29)	(1.30)		
	n	184	438		
1970 Cohort	m	---	---	2.09	1.68
	sd			(1.22)	(1.18)
	n			166	570

Notes: m = cell mean
sd = cell standard deviation
n = cell size

once we have controlled for the effects of economic, educational and socio-demographic variables which tend to obscure actual program impacts. We should note also that the use of these variables will compensate to a degree for the fact that we have comparison groups and not control groups in this study.

CHAPTER 6

IMPACT OF COOPERATIVE VOCATIONAL EDUCATION ON EDUCATIONAL PERFORMANCE

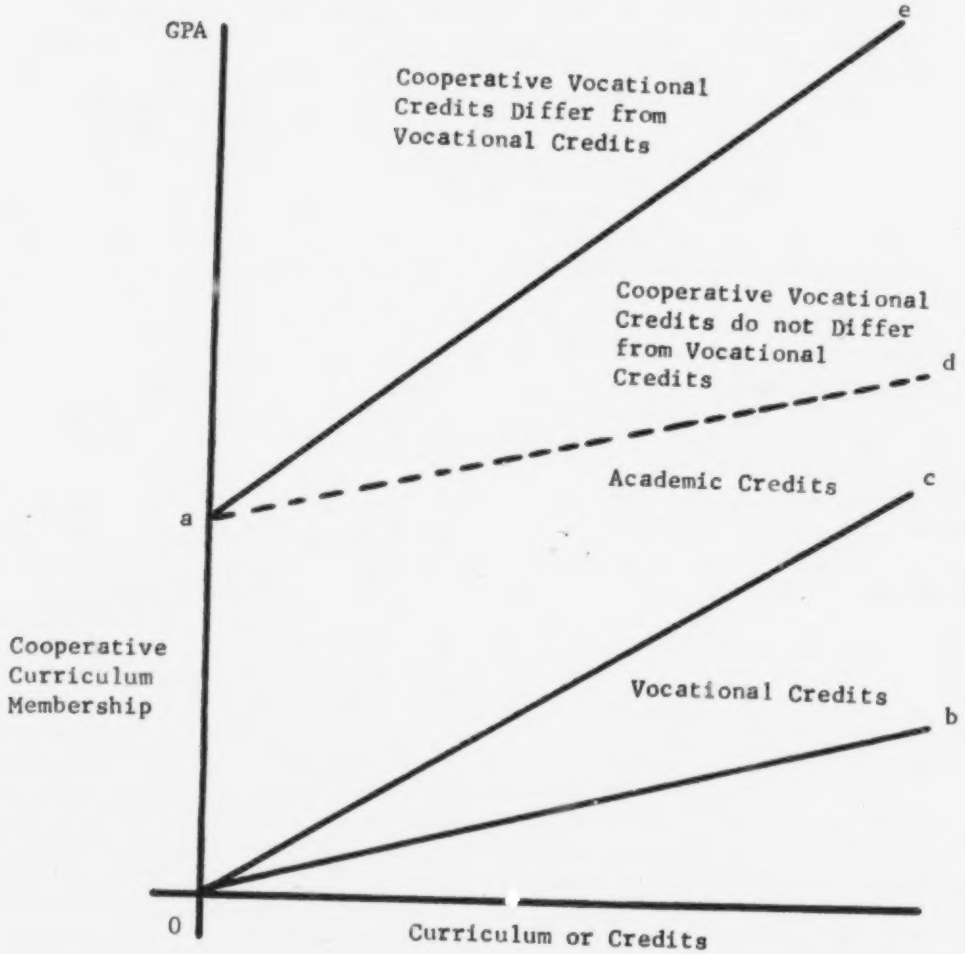
A. Introduction

This chapter analyzes the impact of the cooperative vocational curriculum on five different indices of educational performance. Each of these indices of performance is to be considered an intermediate output of the educational process and not final output Thus, one wishes to graduate from high school in order to achieve some ultimate goal, such as to go on to college or acquire a better job. We ignore the social status aspects of being a high school graduate. These status aspects could be considered final outputs. To continue, one wishes to earn a higher grade point average in order to increase the quality and quantity of one's stock of human capital--again in order to earn a larger lifetime income. There are elements of status and self-esteem to be gained from earning a high GPA, but, again, we ignore these particular final outputs.

Each of the indices of educational output is analyzed from two points of view. First, we compare the difference in average performance of the different curricula compared to the average performance (the grand mean) of the sample as a whole, or to selected sub-samples. Then, we analyze the effect of the curriculum structure on each of these indices of educational performance with two objects in mind. Our first intent is to determine if membership in the cooperative vocational curriculum per se has an effect on the average level of educational performance. Next we wish to determine if the educational performance changes as the number of academic, vocational and cooperative vocational credits changes.

Figure 1 diagrams the hypothetical nature of this test of curriculum structure. As Figure 1 is drawn, we wish to test the following possibilities. First, the diagram indicates that each additional academic credit has a larger average effect on senior or last year grade point average (GPA) than does an additional vocational credit. This is shown by the fact that the slope of the line Oc is greater than the slope of line Ob. Second, we test the possibility that, compared to the other curricula, membership in the cooperative vocational program has an impact on one's GPA independent of the number and type of credits he earns. This is indicated by the distance Oa. Third, we wish to see if an additional cooperative vocational credit has a greater average effect on GPA than an additional ordinary vocational credit. A verification of this hypothesis would indicate that line ae and not line ad described the marginal impact of an additional cooperative credit. The slope of ae is greater than the

FIGURE 1
ANALYSIS OF CURRICULUM STRUCTURE ON GRADE POINT AVERAGE OF SENIOR OR LAST YEAR IN HIGH SCHOOL


GPA
e
Cooperative Vocational Credits Differ from Vocational Credits
Cooperative Vocational Credits do not Differ from Vocational Credits
d
Academic Credits
c
a
Cooperative Curriculum Membership
Vocational Credits
b
0
Curriculum or Credits

slope of Ob whereas ad and Ob are parallel. However, if our test shows there is no difference, then the dotted line ad shows that there is no marginal difference in impact between cooperative vocational credits and all other vocational credits, since the slopes of ad and ob will be the same. In the models described below, an independent variable to test each of these possibilities is employed. The number of academic credits and vocational credits are included separately in each model. The sign and statistical significance of the partial regression coefficients will tell us if the impact of these two types of credits is significantly different from zero and if so, what the constant marginal effect is and whether it is positive or negative. Second, a dummy variable is included which denotes whether or not one is a cooperative student. If the regression coefficient of this variable is significant and positive (negative) then this implies that simply by becoming a cooperative student one's GPA becomes higher (lower). We can interpret this effect in two ways. First, we can see this effect simply as an expression of self-selection bias, whereby selection into the program denotes some set of characteristics that exist prior to program entry which affect one's GPA. Or, we can argue that presence in the cooperative program, in addition to its positive or negative impacts over time, has a once and for all impact at or about the time one enters the program, though it is difficult to envision just what behavior might be operating in this case. Or, there may be characteristics of the cooperative program not associated with the number and quality of credits one earns which may influence performance, such as differential amounts of counseling or better labor market information.

Simple Correlations among X_1, X_6, X_7 and X_1X_7, Total Sample

Education: n = 905	X_6	X_7	X_1X_7
X_1	-.111	.641	.912
X_6		-.327	-.171
X_7			.774
Employment: n = 868			
X_1	-.110	.627	.910
X_6		-.348	-.178
X_7			.765
Earnings: n = 911			
X_1	-.100	.649	.917
X_6		-.317	-.160
X_7			.776

Finally, we attempt to discover if there is any unusual characteristic about the cooperative vocational curriculum itself. We do this by creating an interaction term whereby the dummy variable which denotes presence or absence in the cooperative vocational program is multiplied times one's vocational credits. This tags the vocational credits of the cooperative students with an identifying characteristic. If the partial regression coefficient of this interaction variable is statistically significant and positive (negative) then this indicates that as one earns an additional cooperative vocational credit compared to a regular vocational credit, one's GPA increases (decreases) in addition to the net impact of the regular vocational credits one earns. Briefly, we wish to determine if the slope of the functions for the two types of vocational credits differ.

There is, however, a problem involved in the use of this interaction analysis. Namely, there is a high correlation between the vocational credits one earns and whether one is a cooperative student. As the insert shows, over 60 percent of the variation in the number of vocational credits one earns in associated with being a member of the cooperative program. Thus, with a relatively high correlation between the two variables to begin with, the creation of an interaction term, X_1X_7, results in even higher correlations among the variables designed to test for the effects of curriculum structure. The correlation between the interaction term which identifies cooperative vocational credits and vocational credits is about 77 percent. The correlation between the interaction term and enrollment in the cooperative program is over 90 percent. Fortunately, the correlation between academic credits and the other three variables is relatively low. The implication of this high correlation is that the standard errors of the partial regression coefficients are likely to be larger than in the absence of multicollinearity. This means that the t-ratios (the partial regression coefficient divided by its standard error) will be underestimated. One is therefore likely to conclude that a relationship is not different from zero when in fact its actual value is different from zero. In the analyses to follow, we will often see that there is no difference between the effect of the two types of vocational credits. The question is, is this finding really true or is it due to multicollinearity? Although we do not discount the multicollinearity, we judge that there is no major detrimental effect because the models which analyze the impact of curriculum using dummy variables that have low simple correlations are usually consistent with the models which try to test the effect of curriculum structure.

B. The Analytical Models

The Dependent Variables. There are five dependent variables in this study of educational impact of the cooperative vocational education program. These are as follows:

Y_1: Grade point average, senior or last full year in high school, on a 4.0 scale;

Y_2: Percent of days absent, senior or last full year in high school;

Y_3: Probability of high school graduation, where 1 = graduated and 0 = did not graduate;

Y_4: Probability of acquiring some post-secondary education, where 1 = acquired some post-secondary education and 0 = did not acquire any post-secondary education;

Y_5: Probability that one registers to vote given that he is eligible to register, where 1 = registered and 0 = did not register.

Each of these variables is relatively straightforward and requires little additional comment. As mentioned above, each of these variables is an intermediate output, the achievement of a goal or completion of a process designed to lead one or more additional steps furtyer towards the achievement of some ultimate benefit or gain. The first four variables relate to educational performance per se while Y_5 is taken as a non-economic index of the impact of the cooperative vocational education program. As such it is a measure of the effect of the program on socialization--the acquisition of socially acceptable and useful modes of behavior.

Independent Variables. There are a number of independent variables in this analysis. As the models below will show, each dependent variable is analyzed with a slightly different model and, hence, a slightly different set of independent variables. The variables are defined as follows:

X_1: Curriculum status, where 1 = cooperative vocational curriculum and 0 = not cooperative vocational curriculum;

X_2: Curriculum status, where 1 = academic curriculum and 0 = not academic curriculum;

X_3: Curriculum status, where 1 = general curriculum and 0 = not general curriculum;

X_4: Curriculum status, where 1 = vocational curriculum and 0 = not vocational curriculum;

X_5: Curriculum status, where 1 = undetermined curriculum and 0 = not undetermined curriculum;

X_6: Total academic credits, in units;

X_7: Total vocational credits, in units;

X_8: Graduation cohort, where 1 = 1970 cohort and 0 = 1966 cohort;

X_9: Freshman grade point average, on a 4.0 scale;

X_{10}: Sex, where 1 = female and 0 = male;

X_{11}: Type of sample, where 1 = respondent to long form mail questionnaire and 0 = personal follow-up;

X_{12}: Ethnic origin, where 1 = white and 0 = black and other;

X_{13}: Socio-economic status of father's occupation during majority of student's grade school and high school years, on a scale from one to one hundred;[1]

X_{14}: Years of schooling completed by father;

X_{15}: Percent of time absent, ninth grade or freshman year;

X_{16}: Total credits in social studies, history and related credits, in units;

X_{17}: Per cepita family income during senior or last full year in high school, in dollars;

X_{18}: College education, where 1 = never attended college and 0 = otherwise;

X_{19}: College education, where 1 = attended college but did not earn a degree and 0 = otherwise.

Justification of the Independent Variables. Several of these independent variables bear comment. The curriculum status variables as well as the variables denoting the number of vocational and academic credits are the policy variables in this study. X_5, which denotes a student with an undetermined curriculum is included to maintain as large a sample size as possible. These latter individuals were all non-cooperative students who were in school such a short period of time that, consistent with the definitions of curricula in Appendix F it was not possible to categorize the person. We should note that this variable has no policy significance.

X_{11}, type of sample, is included in all models below to test for differences between the respondents to the long form mail questionnaire and the personal interview sample of non-respondents. Ideally, we would like this variable to not be statistically significant since this would imply no difference between the two samples.

---

[1] Based on "Socio-economic Index and Equivalent NORC Prestige Score for Occupations in the Detailed Classification of the Bureau of the Census: 1950," Albert J. Reiss, Jr., et al., Occupational and Social Status, New York: The Free Press of Glencoe, Inc., 1961, Appendix B.

Two graduation cohorts (X_8) were included in this study. This was done first to increase the total number of cooperative students for analysis and secondly to see if one could make any judgments as to the affect of the Vocational Education Act of 1963 on the cooperative vocational program. The 1966 cohort entered high school in the 1962-63 school year, and the impact of the Act on this cohort would be much less than on the 1966-67 class which would graduate in 1970. Presumably, we expect the performance of the 1970 cohort to be higher than the 1966 cohort. Unfortunately, the test is quite imperfect since many other things have changed over time in addition to the laws funding vocational education. These factors, too, are captured in the dummy variable and obscure the effort to determine if the law has made an impact.

Freshman grade point average, X_9, is included since it is an excellent predictor of senior GPA, a major index of educational performance in this study. We would expect the relationship between these two variables to be positive. The same justification exists for including X_{15}, percent of time absent, ninty grade or freshman year, in the models to predict the percent of absence in senior or last full year.

The inclusion of the sex and ethnic origin variables is straightforward. Girls generally perform better than boys academically. Also, as shown in the previous three chapters, black cooperative students represent a special group in this study. The interaction of these variables with other independent variables in the models below is controlled for by separating the sample into sample subsets as a function of sex and ethnic origin as well as cohort.

Socio-economic status of father's occupation, X_{13}, years of schooling completed by father, X_{14}, and per capita family income during senior or last full year in high school, X_{17}, are all variables which are related to educational aspirations, attainment and performance. Income is an obvious determinant of the ability to invest in post-secondary education, for instance. There is postulated a positive relation between father's education and the probability of high school graduation as well as the probability of acquiring some post-secondary education. Socio-economic status of father's occupation is postulated to operate in a fashion similar to father's education. Each of these three independent variables is complementary to the other. But, in addition, they tend in any empirical analysis to be substitutes for each other. Thus, they add to the problem of multicollinearity which exixts in cross-section data sets of the type used in this study. As such, this multicollinearity does not affect the size and sign of the partial regression coefficients (there is no bias) but it does contribute to the problem of inefficiency in one's estimates. That is, the estimated standard errors tend to be larger than in the absence of multicollinearity. Thus, the t-ratios are smaller (the regression coefficient divided by the standard error). The result is that one may reject a relationship as not being statistically significant when in fact it actually is significant.

With respect to the equations used to estimate the impact of the cooperative vocational program on voter registration, it has been found as discussed earlier in Chapter 4 that educational level, especially college education, is a good predictor of whether one votes or not. Thus, X_{18} and X_{19} are included in the analysis. These two dummy variables are compared in terms of their average effect against the person who attended college *and* earned a degree. Thus, we expect the signs of these two regressors to be negative with respect to the reference group--college graduates who earn a degree. Finally, in the voter registration models total credits in the social studies is included with the assumption that there is a positive relationship between it and the probability of being registered to vote. The inclusion of this variable is consistent with the review of past research reported in Chapter 4.

The Analytical Models. We turn now to a description of the exact specification of the analytical models used in this analysis of the impact of the cooperative vocational education program. Each model has two equation forms; one which estimates average differences in effect among the various competing curricula [Equation (1)] and one which estimates the impact of curriculum structure on the selected indices of educational performance [Equation (2)].

Model A: Grade Point Average, Senior or Last Full Year in High School.

$$(1)\quad Y_{1i} = a_{0i} + a_{1i}X_{2i} + a_{2i}X_{3i} + a_{3i}X_{4i} + a_{4i}X_{5i} + a_{5i}X_{8i} + a_{6i}X_{9i} + a_{7i}X_{10i} + a_{8i}X_{11i} + a_{9i}X_{12i} + a_{10i}X_{13i} + a_{11i}X_{14i} + u_i$$

$$(2)\quad Y_{1i} = a'_{0i} + a'_{5i}X_{8i} + a'_{6i}X_{9i} + a'_{7i}X_{10i} + a'_{8i}X_{11i} + a'_{9i}X_{12i} + a'_{10i}X_{13i} + a'_{11i}X_{14i} + a'_{12i}X_{1i} + a'_{13i}X_{6i} + a'_{14i}X_{7i} + a'_{15i}(X_{1i}X_{7i}) + u'_i$$

In Equation (1) of Model A there are eleven regressors, but only eight variables, since the curriculum status variable is comprised of four regressors. Each of these four regressors, X_2, X_3, X_4 and X_5 is interpreted as an estimate of the average difference between it and the cooperative vocational curriculum. A positive sign on the partial regression coefficient of any of these gregrssors indicates that the curriculum in question has a higher average value than the cooperative curriculum. Note in Equation (2) the interaction term ($X_{1i}X_{7i}$) which tests if there is a difference in the marginal (additional) impact of cooperative vocational credits in contrast to vocational credits, X_7. Also note the additional variable X_1 which tests if there is any average difference in the level of performance between the cooperative and non-cooperative curricula. Each of the variables in these two equations is defined as indicated above. In addition, we define

a_0 through a_{11} as partial regression coefficients;

u as an error term to formally complete the model; and,

i equal to observations 1, 2, 3, . . ., n.

Model B: Percent of Time Absent, Senior or Last Full Year in High School.

$$(1) \quad Y_2 = b_{0i} + b_{1i}X_{2i} + b_{2i}X_{3i} + b_{3i}X_{4i} + b_{4i}X_{5i} + b_{5i}X_{8i} + b_{6i}X_{9i} + b_{7i}X_{10i} + b_{8i}X_{11i} + b_{9i}X_{12i} + b_{10i}X_{13i} + b_{11i}X_{14i} + b_{12i}X_{15i} + u_i$$

$$(2) \quad Y_2 = b'_{0i} + b'_{5i}X_{8i} + b'_{6i}X_{9i} + b'_{7i}X_{10i} + b'_{8i}X_{11i} + b'_{9i}X_{12i} + b'_{10i}X_{13i} + b'_{11i}X_{14i} + b'_{12i}X_{15i} + b'_{13i}X_{1i} + b'_{14i}X_{6i} + b'_{15i}X_{7i} + b'_{16i}(X_{1i}X_{7i}) + u'_i$$

Model C: Probability of High School Graduation and Model D: Probability of Post-Secondary Education are specified the same as Model A, for both Equations (1) and (2), respectively.

Finally, Model E: Probability of Voter Registration is specified as follows:

$$(1) \quad Y_5 = e_{0i} + e_{1i}X_{2i} + e_{2i}X_{3i} + e_{3i}X_{4i} + e_{4i}X_{5i} + e_{5i}X_{8i} + e_{6i}X_{9i} + e_{7i}X_{10i} + e_{8i}X_{12i} + e_{9i}X_{16i} + e_{10i}X_{18i} + e_{11i}X_{19i} + u_i$$

$$(2) \quad Y_5 = e'_{0i} + e'_{5i}X_{8i} + e'_{6i}X_{9i} + e'_{7i}X_{10i} + e'_{8i}X_{12i} + e'_{9i}X_{16i} + e'_{10i}X_{18i} + e'_{11i}X_{19i} + e'_{12i}X_{6i} + e'_{13i}X_{7i} + e'_{14i}X_{1i} + e'_{15i}(X_{1i}X_{7i}) + u'_i$$

As mentioned before, these models and equations are estimated for a variety of socio-demographic groups. For any given group, such as males, the independent variable which identifies that group in the model for the total sample is obviously dropped from the equation being estimated.

C. Analysis of Results

The analysis of the study results is presented in two parts. First, for selected models of the total sample we wish to describe in some detail the way in which the respective models performed--how much of the variance in the dependent variable the models accounted for and what were the levels of statistical significance and signs and sizes of effects of the major independent variables. We are especially interested in determining if the direction of effect of the variables coincides with our *a priori* notions. However, due to limitations of space we shall only analyze Equation (1) in this regard.

Next, we will analyze the program effects based on Equations (1) and (2) for each of the study subgroups in the analysis.

General Performance of the Models. As a general rule, the models explain more of the variance in the dependent variable for Models A and B, Senior or Last Year GPA and Percent of Time Absent in the Senior or Last Year in School, respectively, than for Models C and D, probability of high school graduation and probability of acquiring some post-secondary education. For Y_1, GPA, the coefficients of determination range in the area of the high 40 and mid-fifty percents. (See Appendix Tables E-2 and E-3). For Y_2, Percent Absent, the amount of variance explained by the models is somewhat lower, but still ranges in the high 30 and 40 percent range. All of the models are statistically significant at conventional levels of significance. Equation (2) of Model A explains somewhat more of the variance in Y_1, GPA, than does Equation (1). However, for Percent Absent, Y_2, Equations (1) and (2) explain similar percentages of the variance in the dependent variable.

In contrast, as Appendix Tables E-6 and E-7 show, Models C and D generally explain only from about 20 percent to somewhat more than 30 percent of the variance in their respective dependent variables. Part of the reason for this is the fact that dummy variables are employed as dependent variables. Their range is constrained between zero and one. Equation (2) for both models explains much more, usually more than ten percentage points more, of the variance in the dependent variables than does Equation (1). Even so, the best performance of Equation (2) in Models C and B results in around ten percentage points less variance accounted for than the best performance of Equation (2) in Model A. To repeat, this is in part due to the fact that both Y_1 and Y_2 are continuous variables while Y_3 and Y_4 are dummy variables whose range is constrained between zero and one. Thus, there is a more narrow range of variation in these latter two variables to begin with.

We finally note that Model E for Y_5 performs the poorest of the five models. The models usually explain less than ten percent of the variance. In addition, several of the equations are not statistically significant at conventional levels of significance. A better formulation of this variable, but one which was not feasible in this study, would be to measure the average percent of times a person voted over a given set of voting opportunities.

Effects of Specific Independent Variables. In order to give the reader some feel for the workings of our regression models, for the remainder of this subsection we discuss some general results from the array of regression models we estimated. The reader should note that these results are not summarized in any one table since the amount of data is too voluminous to present. Rather, we intend simply to highlight crucial variables to determine the degree to which their effects conform to our *a priori* expectations. To the extent that they do so conform, we have greater confidence in the quality and accuracy of the model specifications.

In general, within these models of educational performance we find certain independent variables are statistically significant more frequently than others. Freshman grade point average, X_9, is a good example. It is generally significant, though less likely to be so for blacks. This latter phenomenon is consistent with the trend of our findings in Chapter Four where black cooperative students were found to fare less well in terms of senior and cumulative GPA, due, we suspect, to the change in academic environment. Since the pre-cooperative educational environment is different than the cooperative environment for blacks, freshman GPA has less explanatory power for this subgroup.

For the Total Sample, for Y_1, we find that a 1.0 rise in freshman GPA results in a .46 of one grade point rise in senior or last year GPA. It is generally the case that across the set of sub-samples a 1.0 rise in freshman GPA will increase the senior or last year GPA from about .4 to .5 of one grade point. Other independent variables which conform to *a priori* expectations in a very consistent fashion across the models and sample subgroups are sex, X_{10}, and ethnic origin, X_{12}. Next, X_{15}, percent of time absent in ninth grade or freshman year in high school performs consistently with our *a priori* expectations in Model B. It is invariably statistically significant. In general, a one percent increase in freshman absence results in from .4 to .5 of a one percent increase in the percent of time absent in the senior or last year of high school.

Socio-economic status of father's occupation, X_{13}, is generally statistically significant for Model D. As father's socio-economic status increases, the probability of acquiring some post-secondary education rises. However, father's education, X_{14}, is usually not statistically significant. Among the possible reasons for this is multicollinearity which was discussed above. The simple (zero order) correlation between these two variables ranges from about .30 to .60 across the various sample subgroups in the study sample.

Finally, it is of interest to discuss several of the independent variables of Model E. First, consistent with previous studies reported on in Chapter 4, we find that total credits earned in social studies, X_{16}, is never statistically significant. Apart from information redundancy, the fact that a minimum number of one's high school credits are required in social studies can also explain the lack of statistical significance since for some groups the variable may have very low variance or effectually become a constant. In contrast to the weak performance of this variable, X_{18} and X_{19}, never attended college and attended college but never earned a degree, always have the appropriate negative sign with respect to the reference variable, attended college and earned a degree. That is, the former two groups have a lower average voter registration rate than those who have attended college and earned a degree. However, the two variables are not always statistically significant. Lastly, per capita family income in the senior year in high school is consistently positively related to the probability of voter registration, though, again, the variable is not always statistically significant.

Impact of the Policy Variables. We come now to the point of major interest in this chapter. For each dependent variable and model, we first compare the degree to which the students in each curriculum deviate from the average educational performance of the sample group in question. We then analyze the impact of curriculum structure on educational performance.

Model A: GPA, Senior or Last Full Year in School. Table 52 shows the effect of each high school curriculum expressed as a deviation from the grand mean of the study sample in question.[2] The data in Table 52 are interpreted in the following way. For the Total Sample the average grade point is 2.56 on a 4.0 scale, or, about a C-plus average. Cooperative

---

[2] This technique is used and described in James N. Morgan, *et al.*, Income and Welfare in the United States, New York: McGraw-Hill Book Company, Inc., 1962, Appendix E. The algorithm for estimation of deviations from the grand mean can be found in J. Lansing and W. Ladd, "An Example of the Conversion of Regression Coefficients into Deviations about the Grand Mean," Survey Research Center, Economic Behavior Program, University of Michigan, Lansing, Michigan, October, 1962, mimeo.

TABLE 52
IMPACT OF HIGH SCHOOL CURRICULA ON SENIOR GRADE POINT AVERAGE EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
Total Sample	-.10	.20	-.16	-.01	-.53	2.56
Males	-.07	.16	-.19	-.01	-.47	2.42
Females	-.13	.25	-.13	-.03	-.61	2.67
White Males	-.04	.15	-.25	.01	-.68	2.45
White Females	-.12	.21	-.05	-.03	-.75	2.73
Black Males	-.60	.23	.06	-.04	.61	2.25
Black Females	-.12	.43	-.31	.01	.26	2.41
1966 Cohort Males	-.20	.20	-.11	-.00	-.50	2.40
1970 Cohort Males	.05	.18	-.26	-.01	-.44	2.44
1966 Cohort Females	-.20	.28	-.02	-.04	-.54	2.75
1970 Cohort Females	-.06	.25	-.20	-.01	-.68	2.61
1966 Cohort White	-.18	.23	-.09	.00	-.72	2.58
1970 Cohort White	.01	.17	-.19	-.02	-.73	2.62
1966 Cohort Black	-.60	.22	-.08	.03	-.06	2.56
1970 Cohort Black	-.14	.48	-.27	.47	.07	2.22

TABLE 52

Impact of High School Curricula on Senior Grade Point Average Expressed as Deviations from the Grand Mean of the Study Sample (continued)

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
All Cooperative Samples plus Non-cooperative Vocational Education Samples only	-.05	---	---	.05	---	2.45

students earn a senior GPA .10 of one grade point below the grand mean of the sample, or an average grade point of 2.46, slightly less than a C-plus average. This average grade point is adjusted for the influence of each of the variables included in the respective equations. Academic students earn an average grade point of about 2.76 (2.56 + .20). General students earn an average GPA of 2.40 (2.56 - .16) and vocational students earn a GPA of about 2.55 (2.56 - .01). The effect of the "undetermined" curriculum has no policy significance but is included for completeness of the model and to maximize the number of observations in each model. Unfortunately, we were not able to calculate standard deviations for these deviations from the grand mean. However, Appendix Table E-1 expresses the average difference in senior GPA between the cooperative sample and the other three curricula and standard errors are estimated for these regression coefficients. From this table we see that the senior GPA of the cooperative student is .30 of one grade point below that of the academic student, but that there is no statistically significant difference between the senior GPA of cooperative students and general and vocational students in the Total Sample.

Finally, inasmuch as the estimations in Table 52 are based on the partial regression coefficients in Appendix Table E-1, we should point out the relationship between the two sets of estimates. Briefly, for any given comparison of, say the cooperative curriculum with the academic curriculum, the value of the partial regression coefficient should equal the difference between the mean grade points of each curriculum group. Thus, for males we see that the academic students have an average senior GPA .30 of one point higher than that of the cooperative students. (See Table E-1.) Likewise, an inspection of Table 52 shows that the cooperative male senior GPA is -.07 below the grand mean (2.35) while that of the academic male is .16 above the grand mean and equals 2.58. Thus, 2.58 minus 2.35 = .23. Where this difference is not exact, rounding error is the usual cause. Figure 2 shows the relationship graphically.

The salient facts about Table 52 are as follows. First, the cooperative student always has a lower senior GPA than the academic student. In general, the cooperative senior GPA is also lower than that of the non-cooperative vocational student, but the pattern is mixed when one compares the cooperative and general curriculum. However, we should recognize from Appendix Table E-1, only the difference between the cooperative and academic curricula are consistently statistically significant. Next, we should note that cooperative Black Males and the 1966 Black Cohort fare the worst with respect to senior GPA. In addition, notice that no cooperative subgroup is ever substantially above the GPA of the sample mean for any given subgroup and usually, it is below the grand mean.

FIGURE 2
ESTIMATED GRADE POINT AVERAGE, SENIOR OR LAST FULL YEAR IN HIGH SCHOOL, FOR MALES BY HIGH SCHOOL CURRICULUM

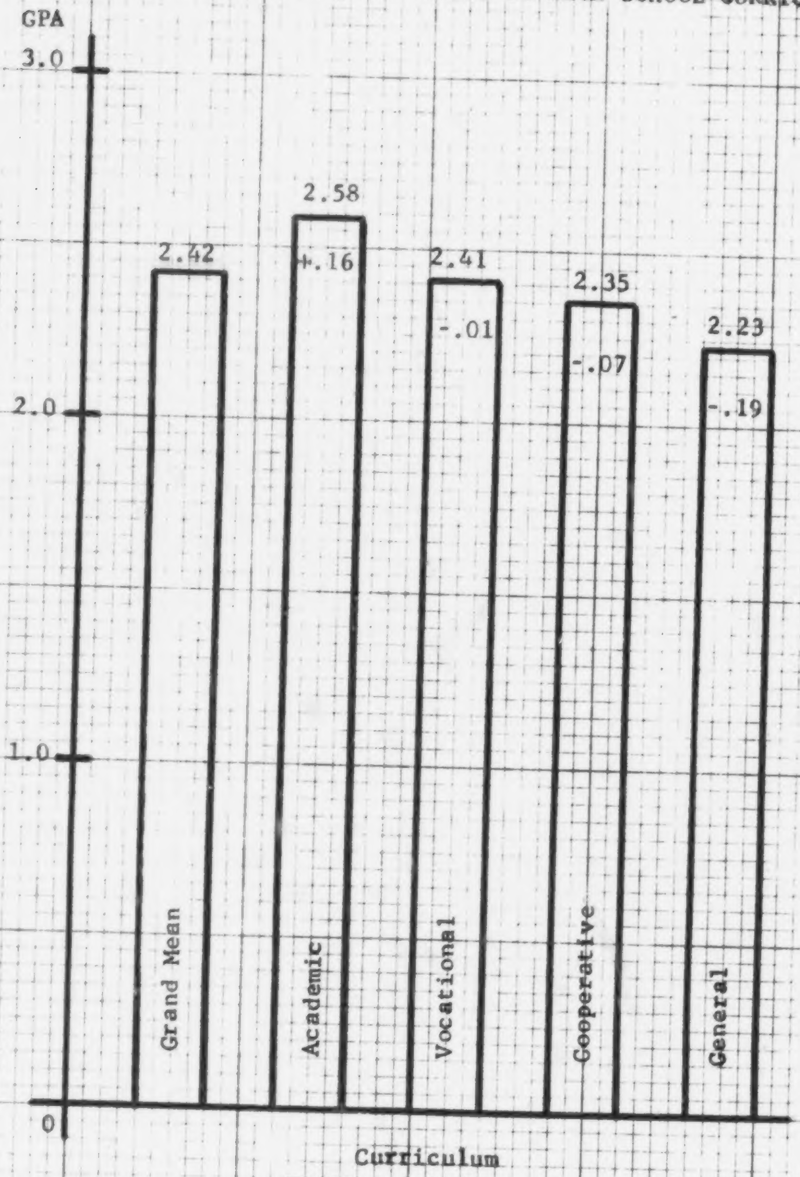


TABLE 53
IMPACT OF HIGH SCHOOL CURRICULA ON PERCENT OF DAYS ABSENT DURING SENIOR YEAR EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
Total Sample	-1.1	-.2	1.8	-.1	.5	4.9
Males	-.4	-1.6	2.4	.9	.9	4.4
Females	-.9	-.3	1.9	-.3	1.0	5.3
White Males	-.7	.4	2.7	-1.7	1.5	4.2
White Females	.4	1.3	-2.5	-.3	-2.2	5.1
Black Males	-1.4	.5	-1.2	1.3	-6.5	5.6
Black Females	-.7	-.8	1.7	-.8	-.4	6.0
1966 Cohort Males	-1.8	.0	2.0	-.1	5.3	3.7
1970 Cohort Males	-.8	-.0	1.0	.2	-3.8	5.1
1966 Cohort Females	-.8	.3	1.2	-.1	1.5	4.1
1970 Cohort Females	-1.5	-.5	2.0	-.6	1.1	6.1
1966 Cohort White	-1.2	.1	2.2	3.5	-.1	3.9
1970 Cohort White	-.9	-.1	1.8	-.3	-1.2	5.3
1966 Cohort Black	-.1	.2	.8	-1.2	.4	3.9
1970 Cohort Black	-5.8	33.2	-7.2	-5.8	-11.0	7.2

TABLE 53

Impact of High School Curricula on Percent of Days Absent during Senior Year Expressed as Deviations from the Grand Mean of the Study Sample (continued)

	Coop-erative	Academic	General	Vocational	Unde-termined	Grand Mean
All Cooperative Samples plus Non-cooperative Vocational Education Samples only	-.5	---	---	.5	---	4.1

Lest one become too alarmed by this finding we should note the interdependency of economic behavior. In this case, cooperative students could rationally and efficiently (in terms of expected future earnings) be trading off a higher quality or quantity of formal education (as evidenced by a higher GPA) in favor of higher quality or quantity of on-the-job training. This possibility may be the only implication of the differences in senior GPA among the curricula. Of course, there are other hypothetical possibilities, too, but the data do not allow us to choose among these competing hypotheses.

Impact of Curriculum Structure on Senior or Last Year GPA. Table 54 allows us to study the structure of the curriculum as it affects senior or last year GPA. Recall for the moment Figure 1. For the Total Sample the variable labelled "cooperative status" says that on the average, the GPA of the cooperative student lies about .4 of a grade point lower than the average for the non-cooperative curricula. Next, since the interaction variable called "cooperative credits" is not statistically significant, we know that the impact of cooperative vocational credits is not statistically significantly different from that of vocational credits earned in the non-cooperative comprehensive high schools. However, for each additional academic credit earned, one's senior GPA rises by about .03 of one grade point. Further inspection shows that these findings are due mainly to the experience of the females in the sample rather than the males. They are more adversely affected by the cooperative program than are the males but we do not know the reason for this. Only academic credits earned has a statistically significant impact on the male senior GPA.

The notable aspect of this table is that cooperative credits almost without exception have no statistically significant impact on senior GPA which is different from that of ordinary vocational credits. Only the 1970 black cohort experiences a positive relationship between cooperative credits and senior GPA. The impact of these cooperative credits is greater than that of ordinary vocational credits.

Of course, in this formulation of Model A, it is difficult to rationalize the existence of a difference in average senior grade point due to presence or absence in the cooperative program. The effect could be due to differences among the students who choose the various curricula to follow, in which case the observed difference is not due to the curricula in question at all. Or, it is due to the curriculum in question. If so, then an average student who joins the cooperative vocational program can expect, on net, that his senior GPA will be .4 of one grade point below his non-cooperative cohorts, most likely because he simply has less time to study since he is working more and investing in more on-the-job training as well as taking more course credits overall as shown in Chapters Three and Four, so that he has less time to spend studying for each credit.

TABLE 54
EFFECT OF CURRICULUM STRUCTURE ON GRADE POINT AVERAGE IN SENIOR OR LAST YEAR IN SCHOOL AND PERCENT OF TOTAL DAYS ABSENT

	Cooperative Status	Academic Credits	Vocational Credits	Cooperative Credits	Number of Observations
Total Sample					905
Grade Point Average	-0.393** (0.112)	0.070** (0.007)	0.028* (0.011)	0.029 (0.019)	
Percent of Days Absent	-0.018* (0.007)	-0.002** (0.000)	-0.002** (0.001)	0.001 (0.001)	
Males					402
Grade Point Average	-0.332 (0.201)	0.070** (0.010)	0.019 (0.017)	0.037 (0.034)	
Percent of Days Absent	-0.024 (0.012)	-0.002** (0.001)	-0.001 (0.001)	0.001 (0.002)	
Females					503
Grade Point Average	-0.488** (0.142)	0.071** (0.010)	0.032* (0.016)	0.031 (0.024)	
Percent of Days Absent	-0.013 (0.010)	-0.002** (0.001)	-0.004** (0.001)	0.002 (0.001)	
White Males					348
Grade Point Average	-0.188 (0.212)	0.070** (0.011)	0.033 (0.018)	0.012 (0.036)	
Percent of Days Absent	-0.025* (0.013)	-0.002** (0.001)	-0.003* (0.001)	0.002 (0.002)	
White Females					404
Grade Point Average	-0.404** (0.143)	0.060** (0.010)	0.034 (0.018)	0.017 (0.025)	

TABLE 54

Effect of Curriculum Structure on Grade Point Average in Senior or Last Year in School and Percent of Total Days Absent (continued)

	Cooperative Status	Academic Credits	Vocational Credits	Cooperative Credits	Number of Observations
Percent of Days Absent	-0.012 (0.009)	-0.002** (0.001)	-0.003 (0.001)	0.001 (0.002)	
Black Males					54
Grade Point Average	-1.589* (0.670)	0.043 (0.033)	-0.056 (0.040)	0.211 (0.108)	
Percent of Days Absent	-0.028 (0.052)	-0.001 (0.003)	0.005 (0.003)	-0.001 (0.008)	
Black Females					99
Grade Point Average	-1.059 (0.598)	0.110** (0.024)	0.026 (0.040)	0.123 (0.092)	
Percent of Days Absent	-0.043 (0.035)	-0.003* (0.001)	-0.007** (0.002)	0.010 (0.005)	
1966 Cohort Males					205
Grade Point Average	-0.367 (0.251)	0.057** (0.014)	0.011 (0.234)	0.035 (0.049)	
Percent of Days Absent	-0.029* (0.014)	-0.002* (0.001)	-0.003* (0.001)	0.002 (0.003)	
1970 Cohort Males					197
Grade Point Average	-0.249 (0.408)	0.087** (0.156)	0.027 (0.024)	0.032 (0.060)	
Percent of Days Absent	0.003 (0.027)	-0.002 (0.001)	0.000 (0.002)	-0.004 (0.004)	
1966 Cohort Females					211
Grade Point Average	-0.442** (0.155)	0.058** (0.013)	0.022 (0.022)	0.021 (0.029)	

TABLE 54

Effect of Curriculum Structure on Grade Point Average in Senior or Last Year in School and Percent of Total Days Absent (continued)

	Cooperative Status	Academic Credits	Vocational Credits	Cooperative Credits	Number of Observations
Percent of Days Absent	-0.018 (0.009)	0.001 (0.001)	-0.004** (0.001)	0.003 (0.002)	
1970 Cohort Females					292
Grade Point Average	-0.456 (0.291)	0.080** (0.014)	0.040 (0.024)	0.027 (0.041)	
Percent of Days Absent	-0.007 (0.018)	-0.003** (0.001)	-0.004* (0.002)	0.002 (0.003)	
1966 Cohort White					356
Grade Point Average	-0.349 (0.136)	0.051** (0.010)	0.018 (0.017)	0.020 (0.026)	
Percent of Days Absent	-0.020 (0.008)	-0.002 (0.001)	-0.004** (0.001)	0.002 (0.001)	
1970 Cohort White					396
Grade Point Average	-0.116 (0.230)	0.078** (0.011)	0.045* (0.019)	-0.009 (0.034)	
Percent of Days Absent	-0.044 (0.015)	-0.002** (0.001)	-0.002 (0.001)	-0.001 (0.002)	
1966 Cohort Black					60
Grade Point Average	-0.744 (0.483)	0.074** (0.023)	0.019 (0.050)	0.038 (0.109)	
Percent of Days Absent	-0.078** (0.027)	-0.001 (0.001)	-0.002 (0.003)	0.020** (0.006)	

TABLE 54

Effect of Curriculum Structure on Grade Point Average in Senior or Last Year in School and Percent of Total Days Absent (continued)

	Cooperative Status	Academic Credits	Vocational Credits	Cooperative Credits	Number of Observations
1970 Cohort Black					93
Grade Point Average	-2.483* (0.951)	0.112** (0.028)	0.006 (0.362)	0.329* (0.131)	
Percent of Days Absent	0.011 (0.066)	-0.003 (0.002)	-0.002 (0.003)	-0.002 (0.009)	
All Cooperative Samples plus Noncooperative Vocational Education Samples					445
Grade Point Average	-0.282 (0.162)	0.050** (0.012)	0.026 (0.023)	0.017 (0.028)	
Percent of Days Absent	-0.008 (0.010)	-0.002** (0.001)	-0.001 (0.001)	0.000 (0.002)	

Notes: The statistics are the partial regression coefficient and its standard error in parenthesis.

* = significant at the .05 level.

** = significant at the .01 level.

Model B: Percent of Time Absent, Senior or Last Full Year in High School.

Are cooperative students likely to show a stronger sense of responsibility or application to schooling? To the extent that absentee behavior is an index of this desirable type of behavior, we can determine the relative impact of the cooperative program. Table 53 displays the estimated results of Equation (1) for the four curricula. Appendix Table E-1 displays the regression coefficients on which these calculations are based.

For the Total Sample, we see that cooperative students are absent about 3.8 percent (4.9 - 1.1) during the senior year while academic students are absent an average of about 4.9 percent of the senior or last year they are in high school. In general, attendance in the cooperative program results in slightly smaller absentee rates compared to the grand mean of any of the sub-samples in question. However, we can see from Table E-1 that few of the differences between the cooperative curriculum and the other curricula are statistically significant. One should note that while the deviations from the grand mean appear very large for the 1970 Cohort Black, Table E-1 indicates that none of the average differences between the cooperative and other curricula are statistically significant for this subgroup.

Impact of Curriculum Structure on Percent of Days Absent. Table 54 displays the analysis of curriculum impact on the percent of days absent for a variety of socio-demographic subgroups. For only one subgroup the 1966 Cohort Black, is there a statistically significant relationship. In this case, a one credit increase (a full academic year's work for a given course) in cooperative vocational credits results in a two percentage point increase in absenteeism. (The coefficients must be multiplied by 100 to convert them to percentages.) Participation in the cooperative program often results in a lower rate of absenteeism. For the Total Sample, cooperative students are absent, on the average, 1.8 percentage points less than students in the non-cooperative curricula. We also note that as a person earns an additional academic credit, his absenteeism rate drops by .2 of one percentage point. The same effect exists as a person earns an additional vocational credit. Thus, for the Total Sample, attendance in the cooperative program affects the average level of the absenteeism rate. Also, as academic and vocational credits earned increase, the absentee rate drops. But, there is no difference in the effect on the absentee rate between cooperative vocational credits and non-cooperative vocational credits.

The next uniformity we should note is that, in general, earning an additional academic credit implies a reduction in the percent of days absent or at worst a zero effect on the absenteeism rate. This is also true for vocational credits.

One point we should note here is that the better students may also be the students who earn more credits of all types. They may also be the students who are less likely to be absent. The inclusion of freshman grade point average as well as father's education and the socio-economic status of his occupation in these equations is an attempt to overcome this problem, but clearly cannot overcome it completely.

Model C. Impact of High School Curricula on Percent Graduating. Graduation from high school, in our credentialled society, is often a prerequisite to a better job and is a prerequisite to attend college. Of course, if you have no intention of ever attending college, you have less incentive to graduate from high school. To the extent that cooperative students place a lower value on the option of acquiring post-secondary education they will have less incentive, other things equal, to graduate from high school. Of course, other factors may motivate them more toward graduation. For instance, it is conceivable that when a rational person knows that his formal education may end at high school he feels he had better make the most of it. Also, there is some status value to being a high school graduate rather than a dropout but we do not know how students in the different curricula might value this status so we can't gauge the impact of this on their incentive to graduate from high school. In short, we don't know, a priori, if institutional and psychological pressures are such that cooperative students are more or less likely to graduate from high school. The issue is purely one of empirical determination. To that determination we turn to Tables 55, 56 and Appendix Table E-4.

Equation (1): The Average Probability of High School Graduation as a Function of Curriculum. Appendix Table E-4 shows that there is no statistically significant difference in the probability of high school graduation for cooperative students compared to academic curriculum students, but for almost every sample subgroup other than those which are black, cooperative students have a higher average probability of graduation than students in the general curriculum. As a general statement, there is usually no difference in graduation rates between cooperative and non-cooperative vocational students, however.

Table 55 expresses the graduation rate as a percent. For the total sample we see that the mean graduation rate for the Total Sample is 94.5. The average graduation rate of cooperative students is 98.7 percent (94.5 + 4.2); that of academic students is 96.6 percent; that of vocational students, 99.0 percent; and that of general students, 83.7 percent. The major impression one gets from Table 55 is that general students experience graduation rates consistently below the average sample experience while the other three curricula fluctuate very close to each other. Indeed, the results of Table 55, although significance tests are absent, bear out the results of Appendix Table E-4, as one would expect.

TABLE 55
IMPACT OF HIGH SCHOOL CURRICULA ON PERCENT GRADUATING, EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
Total Sample	4.2	2.1	-11.8	4.5	-50.0	94.5
Males	3.4	2.3	-11.5	3.1	-31.8	96.0
Females	4.7	1.9	-11.5	5.5	-65.0	93.2
White Males	4.4	2.6	-13.4	2.4	-42.2	95.9
White Females	4.6	1.2	-10.3	4.5	-78.7	93.7
Black Males	-14.6	-4.4	-2.0	6.0	13.4	96.3
Black Females	4.4	5.7	-14.9	9.4	3.9	91.9
1966 Cohort Males	4.9	2.2	-8.9	2.8	-92.1	96.1
1970 Cohort Males	1.2	1.4	-13.5	4.2	9.9	95.9
1966 Cohort Females	2.8	1.9	-9.7	3.4	-61.7	94.8
1970 Cohort Females	5.4	1.6	-10.8	7.4	-78.7	92.1
1966 Cohort White	3.3	2.3	-7.8	2.4	-89.6	95.5
1970 Cohort White	4.7	1.8	-13.5	5.4	-32.8	93.9
1966 Cohort Black	6.3	4.6	-13.8	5.2	6.6	95.0
1970 Cohort Black	-8.2	1.3	-7.8	8.4	16.5	92.5

TABLE 55

Impact of High School Curricula on Percent Graduating, Expressed as Deviations from the Grand Mean of the Study Sample (continued)

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
All Cooperative Samples plus Non-cooperative Vocational Education Samples	.3	---	---	-.3	---	98.0

Finally, in this regard, we should note that for any subgroup containing blacks, there is no difference in graduation rate among the curricula. Thus, although, for instance, a graduation rate of 101.3 is implied for the 1966 Cohort Black cooperative students, the regression coefficients on which this estimate is based are not statistically significant from zero so the black experience of any curriculum is equal to that of the grand mean.

Effects of Curriculum Structure on the Probability of High School Graduation. The impact of curriculum structure is detailed in Table 56. Several points are of interest. First, in only one case, 1966 Cohort Males, does the cooperative student enjoy an advantage in the average probability of graduation vis-a-vis the other curricula. This, of course, is not inconsistent with the previous analysis since we saw in Appendix Table E-4 that there is generally no difference between cooperative students and academic or vocational students. The advantage which cooperative students have over general students can easily be explained by the different quantity of academic and vocational credits the students in the two curricula earn during high school.

Second, we note that earning an additional cooperative vocational credit results in a reduction in the probability of graduation of .018 (or 1.8 percent). Upon further inspection, we see that this effect is due to 1970 White Cohort Females. However, it is not clear whether this is an anomaly in the data due to non-response bias or whether it is due to a structural interaction between the cooperative program and the 1970 cohort of white females.

Next, we see that for Black Males no aspect of curriculum structure has any effect on the probability of graduation. This finding must be tempered by the fact that the sample size for this group is only 54. Finally, we note that earning an additional academic or vocational credit has a positive effect on one's graduation probability, but we must again refer the reader to our previous discussion of this matter with respect to Equation (2) of Model B. Namely, persons who earn more of either type of high school credit may be more likely to graduate due to some third characteristic which may be imperfectly controlled for in the model.

Model D: Impact of the Cooperative Curriculum on the Probability of Acquiring Some Post-Secondary Education. We know already from the discussion in Chapter Four that cooperative students are less likely to acquire post-secondary education. This is not necessarily inconsistent with the aims of the cooperative vocational program, though, other things equal, a higher option value to advanced education is better than a lower

TABLE 56
ANALYSIS OF THE EFFECT OF CURRICULUM STRUCTURE ON THE PROBABILITY OF HIGH SCHOOL GRADUATION

	Cooperative Status	Academic Credits	Vocational Credits	Cooperative Credits	Number of Observations
Total	.025 (.037)	.035** (.002)	.045** (.004)	-.018** (.006)	905
Males	.078 (.062)	.027** (.003)	.029** (.005)	-.015 (.011)	402
Females	-.006 (.048)	.042** (.003)	.059** (.006)	-.025** (.008)	503
White Males	.092 (.064)	.028** (.003)	.033** (.005)	-.018 (.011)	348
White Females	-.002 (.049)	.042** (.004)	.059** (.006)	-.025** (.009)	404
Black Males	-.194 (.239)	.005 (.012)	.005 (.014)	.007 (.039)	54
Black Females	-.020 (.206)	.041** (.008)	.063** (.014)	-.029 (.032)	99
1966 Cohort Males	.156* (.078)	.024** (.004)	.028** (.007)	-.024 (.015)	205
1970 Cohort Males	-.219 (.122)	.032** (.005)	.031** (.007)	.021 (.018)	197
1966 Cohort Females	-.048 (.052)	.043** (.004)	.053** (.007)	-.009 (.010)	211
1970 Cohort Females	.511 (.101)	.041** (.005)	.069** (.008)	-.043** (.014)	292
1966 Cohort Whites	.016 (.044)	.034** (.003)	.041** (.005)	-.009 (.008)	356
1970 Cohort Whites	.028 (.077)	.036** (.004)	.055** (.006)	-.028* (.011)	396

TABLE 56

Analysis of the Effect of Curriculum Structure on the Probability of High School Graduation (continued)

	Cooperative Status	Academic Credits	Vocational Credits	Cooperative Credits	Number of Observations
1966 Cohort Black	.083 (.188)	.023* (.009)	.030 (.019)	-.007 (.042)	60
1970 Cohort Black	-.578 (.331)	.042** (.010)	.046** (.013)	.047 (.045)	93
All Cooperative Samples plus Noncooperative Vocational Education Samples	-.051 (.039)	.020** (.003)	.018** (.006)	.003 (.007)	445

Notes: The statistics are the partial regression coefficient and its standard error in parenthesis.

* = significant at the .05 level.

** = significant at the .01 level.

option value.[3] However, a different option value and its attendant benefits implies a different quantity and structure of costs. So, it is not inconceivable that a person who does not go to a college or university is no worse off in terms of the net present value of his lifetime earnings than a person who does go to college. Much of the discussion in the early 1960's that a college education was "worth" an extra $100,000 in lifetime earnings was erroneous since the figures which were bandied about were undiscounted and not net of costs.

Therefore, we are mainly interested in this section in the empirical question as to what are the average probabilities of post-secondary education by curriculum. We are not willing to say that the differences we discover represent "goods" or "bads" for any curriculum in question. Tables 57, 58 and Appendix Table E-5 detail the results of the analysis.

Average Differences Among Curricula: Probability of Acquiring Some Post-Secondary Education. Once one controls for the effect of the independent variables described in Model C, Equation (1) we find that there are no marked differences among the curricula in the average probability of acquiring some post-secondary education. (See Appendix Table E-5.) Except for the sample subset of cooperative and non-cooperative vocational students only, there is no difference in the probability of acquiring post-secondary education when one compares the cooperative with the general or vocational curriculum. The differences which do exist between the academic and cooperative curricula exist due to the behavior of white females in both the 1966 and 1970 cohorts. For the Total Sample, those students in the academic curriculum have a post-secondary education rate 19.7 percent higher than cooperative students. This is due to the fact that the rate for academic White Females is 34.7 percent higher than for cooperative White Females. For other groups--mainly Males and Blacks and all combinations of these--there is no difference between the two curricula in the probability that post-secondary education will occur.

Thus, while Table 57 details the average frequency of acquiring some post-secondary education, it cannot be interpreted without reference to Appendix Table E-5. Even so, it is instructive to note that for almost every sample subgroup, the percent of cooperative students which acquire some post-secondary education is generally lower than the grand mean of any given sample group while that of students in the academic curriculum is always higher. For example, 46.6 percent of white cooperative females acquire some post-secondary education while 81.3 percent of the white female academic students do so.

---

[3] See Burton A. Weisbrod, The External Benefits of Public Education, Princeton, New Jersey: Princeton University, Industrial Relations Section, 1964, p. 19 ff.

TABLE 57

IMPACT OF HIGH SCHOOL CURRICULA ON PERCENT OF STUDENTS ACQUIRING SOME POST-SECONDARY EDUCATION, EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE

	Coop- erative	Academic	General	Vocational	Unde- termined	Grand Mean
Total Sample	-5.0	14.7	-4.6	-8.9	-34.1	63.8
Males	-2.8	5.2	2.3	-4.2	-42.1	70.6
Females	-8.1	25.3	-10.9	-11.6	-25.6	58.5
White Males	-2.4	4.7	.6	-3.3	-45.0	71.8
White Females	-10.3	24.4	-4.4	-14.1	-31.4	56.9
Black Males	-18.1	14.1	6.3	-6.7	-27.7	63.0
Black Females	8.8	32.6	-23.4	-6.6	35.0	64.7
1966 Cohort Males	-5.7	1.4	6.3	1.0	-60.4	80.4
1970 Cohort Males	-1.0	8.9	-1.7	-7.9	-28.3	60.4
1966 Cohort Females	-3.8	20.9	-9.8	-13.5	-18.8	65.4
1970 Cohort Females	-12.2	30.3	-12.7	-10.3	-35.7	53.4
1966 Cohort White	-4.3	10.1	7.7	-9.3	-43.7	72.4
1970 Cohort White	-7.2	14.6	-7.2	-7.9	-28.0	56.1
1966 Cohort Black	-10.2	18.2	-23.4	-1.2	26.2	75.0
1970 Cohort Black	7.7	31.6	-6.4	-9.4	-44.6	57.0

TABLE 57

Impact of High School Curricula on Percent of Students Acquiring Some Post-Secondary Education, Expressed as Deviations from the Grand Mean of the Study Sample (continued)

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
All Cooperative Samples plus Non-cooperative Vocational Education Samples	.5	---	---	-.3	---	52.5

Effect of Curriculum Structure on the Probability of Acquiring Some Post-Secondary Education. We find that the analysis shown in Table 58 bears out the results of the analysis shown in Table 57 and Appendix Table E-5. Once one controls for the credit structure, there is no difference between the cooperative and non-cooperative curricula in the probability that a person will acquire some post-secondary education. The number of cooperative vocational credits one earns does not affect one's probability nor, except in one case--the Total Sample--does the number of vocational credits. Whether or not one acquires some post-secondary education is mainly a function of the academic credits he acquires. Thus, for the Total Sample, earning one additional academic credit results in an increased frequency of 4.7 percent in acquiring post-secondary education. Except for Black Males, where curriculum structure has no net impact on acquiring post-secondary education, this marginal impact ranges between four and six percent when one acquires one additional academic credit. Thus, it is the academic credits a cooperative student acquires which influence his probability of gaining further formal education beyond high school.

Model E: Impact of the Cooperative Curriculum on Probability of Voter Registration. Our final index of educational performance is an attempt to measure one aspect of the socialization function of education. The question is, do different curricula differentially prepare one for effective behavior in our society? Whether or not one votes is only one index of this socialization goal but it is one which is amenable to objective measurement. Also, as we have shown in Chapter 4, there is considerable interest among educators and political scientists as to the differential effects of education on voting behavior. Thus, since there is a body of literature to refer to, analysis of the cooperative vocational curriculum seems useful in the present study. Tables 59, 60 and Appendix Table E-8 show the results of the analysis. The results are fairly clear cut. Namely, our models detect no difference in the probability of voter registration either as a function of enrollment in a specific curriculum or as a function of curriculum structure. Yet, these results have to be qualified by the fact that Equations (1) and (2) of Model E explain a very small proportion of the variance in the dependent variable and for Blacks the equations are not statistically significant at any conventional level of significance. There is always the possibility that other formulations of the model would achieve different statistical estimates and we confess to having done considerable experimentation in the absence of any clear-cut theoretical model to guide us. But we feel these estimates represent our best estimates. We hesitate to fob off the reader with the banality that "further research needs to be done on this problem" but in this case there seems to be no other option.

TABLE 58

ANALYSIS OF THE EFFECT OF CURRICULUM STRUCTURE ON THE PROBABILITY OF ACQUIRING SOME POST-SECONDARY EDUCATION AFTER LEAVING HIGH SCHOOL

	Cooperative Status	Academic Credits	Vocational Credits	Cooperative Credits	Number of Observations
Total	.114 (.081)	.047** (.005)	-.18* (.008)	-.015 (.014)	905
Males	.041 (.140)	.037** (.007)	-.015 (.012	-.004 (.024)	402
Females	.130 (.104)	.056** (.007)	-.016 (.012)	-.019 (.018)	503
White Males	.042 (.147)	.040** (.007)	-.007 (.013)	-.008 (.025)	348
White Females	.075 (.107)	.057** (.008)	-.025 (.013)	-.007 (.019)	404
Black Males	-.214 (.518)	.014 (.025)	-.053 (.031)	.034 (.084)	54
Black Females	.314 (.416)	.050** (.017)	.012 (.028)	-.044 (.064)	99
1966 Cohort Males	-.045 (.165)	.021* (.009)	.001 (.016)	.003 (.032)	205
1970 Cohort Males	.187 (.292)	.054** (.011)	-.026 (.017)	-.020 (.043)	197
1966 Cohort Females	.074 (.121)	.056** (.010)	-.007 (.017)	-.015 (.023)	211
1970 Cohort Females	.306 (.210)	.061** (.010)	-.023 (.018)	-.033 (.030)	292
1966 Cohort Whites	.074 (.099)	.039** (.007)	-.008 (.012)	-.012 (.019)	356
1970 Cohort Whites	.209 (.165)	.059** (.008)	-.026 (.014)	-.024 (.024)	396

TABLE 58
Analysis of the Effect of Curriculum Structure on the Probability of Acquiring some Post-Secondary Education after Leaving High School (continued)

	Cooperative Status	Academic Credits	Vocational Credits	Cooperative Credits	Number of Observations
1966 Cohort Black	.464 (.345)	.042* (.017)	.002 (.036)	-.134 (.078)	60
1970 Cohort Black	.002 (.703)	.053* (.021)	-.013 (.027)	.026 (.096)	93
All Cooperative Samples plus Noncooperative Vocational Education Samples	.106 (.128)	.049** (.009)	-.019 (.182)	-.011 (.022)	445

Notes: The statistics are the partial regression coefficient and its standard error in parenthesis.

* = significant at the .05 level.

** = significant at the .01 level.

TABLE 59

IMPACT OF HIGH SCHOOL CURRICULA ON PERCENT REGISTERED TO VOTE, EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
Total Sample	-1.5	2.0	-3.6	2.1	-8.6	57.0
Males	-7.7	3.1	-5.2	4.7	12.4	57.3
Females	6.5	-2.4	-3.4	-.3	-24.5	56.8
Whites	-1.0	2.6	-1.0	-1.7	.2	56.5
Blacks and Others	-35.1	-5.3	-4.5	22.3	-83.0	60.0

TABLE 60
ANALYSIS OF COOPERATIVE VOCATIONAL EDUCATION ON VOTER REGISTRATION BEHAVIOR

	Cooperative Status	Academic Credits	Vocational Credits	Cooperative Credits	Number of Obser- vations
Total Sample	0.064 (0.113)	0.003 (0.010)	0.022 (0.015)	-0.021 (0.022)	**499**
Males	-0.120 (0.202)	-0.010 (0.014)	0.045* (0.021)	-0.013 (0.040)	**247**
Females	0.133 (0.150)	0.005 (0.015)	-0.006 (0.023)	-0.006 (0.028)	**252**
Whites	0.078 (0.118)	-0.002 (0.011)	0.015 (0.017)	-0.018 (0.023)	**424**
Blacks	-0.050 (0.431)	0.020 (0.026)	0.043 (0.040)	-0.105 (0.095)	**75**

Notes: The statistics are the partial regression coefficient and its standard error in parenthesis.

* = significant at the .05 level.

** = singificant at the .01 level.

D. Conclusions

As in any study of a complex educational investment process with multiple objectives and outputs, the effect of the investment across the dimensions of its broad output will almost certainly be shown to be varied and often ambiguous. In this Chapter the ambiguity is compounded by the fact that most of the indices of educational effect are measures of intermediate and not final program output and, ideally, we want to measure final outputs. Also, each of these outputs is perceived differently by the students in the various curricula. By the very nature of the educational program, and one's long run strategy, cooperative students are bound to view the potential value of attending a college or university differently than academic students. This study fails to capture the essence or dimensions of this difference. Even the performance in terms of grade point average is not an unambiguous index of performance among curricula since rational students will make conscious tradeoffs between acquiring formal knowledge versus knowledge on-the-job. These tradeoffs, even if they result in a lower GPA, may result in greater lifetime net advantages for a given group. Thus, the problem of evaluation of a multiproduct-multistage educational investment process is probably one of the most complex problems in the area of the social sciences.

Given this apologia, the following broad dimensions of the analysis bear highlighting. With respect to grade point average in the senior or last year in high school, cooperative students perform at a lower average level than academic students. Once one controls for the structure of academic and vocational credits _per se_, differences among the curricula tend to disappear. The number of cooperative vocational credits earned has no independent impact on one's GPA vis-a-vis the non-cooperative vocational credits.

We find similar results with respect to the percent of time absent in the senior or last year in high school. There is a slight advantage in favor of the cooperative curriculum when it is compared against the other three curricula. But, except for the Total Sample and the 1966 Cohort Male and 1966 Cohort Black sample subgroups, this advantage effectively disappears when one controls for curriculum structure. Only in one case, 1966 Cohort Black, is there a statistically significant relationship between relative frequency of absence and the number of cooperative vocational credits.

With respect to the probability of graduation, cooperative vocational students perform better than general and vocational students but there is no difference between academic and cooperative students. The analysis of curriculum structure shows that academic and vocational credits have a positive and statistically significant relationship with probability of graduation, but cooperative vocational credits generally have no effect and there is _no_ difference in the average percent of graduation of the cooperative and non-cooperative students.

Academic students are more likely to acquire post-secondary education than cooperative students but in general there are no differences among cooperative, general and vocational students. When one analyzes the curriculum structure, only academic credits has a positive and statistically significant relation to the probability of acquiring post-secondary education.

Finally, given our models and sample sizes, we were able to discern no statistically significant effects of curriculum or curriculum structure on the probability of registering to vote.

CHAPTER 7

ECONOMIC IMPACT OF THE COOPERATIVE VOCATIONAL EDUCATION PROGRAM

A. Introduction

This chapter presents the analysis of labor market effects of the cooperative vocational education program. Regression models are used to refine the estimate of the impact of the cooperative program on selected labor market indices. This analysis is performed for a variety of socio-demographic and educational sub-samples. The major analysis of the chapter is broken into two parts. First, we analyze the effect of the program on employment and unemployment. Then we estimate the impact of the cooperative program on average hourly wage rates and average monthly earnings.

As with the analysis of educational effects, there are two methodological approaches to the analysis performed here. First we define the curricula into four mutually exclusive sets and estimate the difference in average impact each curriculum has on the selected labor market indices. /See Equation (1) below./ These differences are then mathematically redefined and expressed as deviations from the grand mean of the study sample or respective sub-samples. Next, the high school experience is expressed in terms of curriculum structure. /See Equation (2) below./ To achieve this, as in Chapter Six, we distinguish academic, vocational and cooperative vocational course credits as well as whether a student is a member of the cooperative or non-cooperative curriculum. The rationale for this approach is developed in Chapter 6 and the reader is referred to Chapter Six for the more detailed discussion of these two methodological approaches.

B. Methodological Considerations

The Dependent Variables. There are eight dependent variables which serve as indices of labor market performance in this study. These are the following:

Y_1: Total months elapsed between leaving high school and acquiring one's first job lasting one month or longer;

Y_2: Total months employed on first job lasting one month or longer since leaving high school;

Y_3: Total months employed on last job lasting one month or longer since leaving high school;

Y_4: Percent of time unemployed since leaving high school;

Y_5: Average hourly wage rate on first job lasting one month or longer since leaving high school;

Y_6: Average hourly wage rate on last job lasting one month or longer since leaving high school;

Y_7: Average monthly earnings on first job lasting one month or longer since leaving high school; and,

Y_8: Average monthly earnings on last job lasting one month month or longer since leaving high school.

In addition, Appendix E contains the analysis but no discussion of the following dependent variables: Average hourly wage rate and average monthly earnings on the longest job held lasting one month or longer since leaving high school; Total months employed on longest job lasting one month or longer since leaving high school; Total months employed since leaving high school; and, finally, analysis on selected variables above for the sample of respondents who have been in the labor market at least 55 percent of the time since leaving high school.[1] While the detailed results of this latter group are not presented in tabluations in this chapter, the impact of the cooperative program on selected labor market indices for this group is discussed at appropriate points in the text.

Discussion of the Dependent Variables. Each of the above variables are relatively straightforward and have been used in similar labor market analyses in the past. Y_1 is an index of the opportunity cost in foregone wages required to find one's first permanent job. However, this variable includes both the time spent in job search before acquiring one's first job and the time spent out of the labor force due to full time post-secondary schooling or other non-labor force activity. Thus, it only approximates a measure of the cost of job search for the initial job. More precisely, it is simply an index of foregone earnings due to all types of activity prior to acquiring one's first job lasting a month or longer. Y_2 and Y_3 are proxy measures of employment stability. Other things equal, it is obviously desirable to have a job for a longer rather than a shorter period. Y_4 is a measure of employment security. Unemployment here is defined as in the Current Population Survey. Y_5 and Y_6 are measures of the productivity of the students as determined by the labor market, though we are aware that the market only measures this relative productivity in an imperfect way. Earnings, Y_7 and Y_8, are measures of productivity which incorporate the amount of time worked as well as the remuneration per unit of time. As noted in Chapter Five,an increase in the average hourly wage rate represents an unambiguous increase in economic welfare since income will rise if hours worked are constant and can rise even if hours worked fall. An increase in earnings does not carry this lack of ambiguity with respect to whether or not one's welfare has increased, since an increase in earnings due to increased hours worked with the wage rate constant implies a reduction in benefits due to reduced leisure or non-market work.

---

[1] The 55 percent cutoff was used because it approximately represents the average labor force participation rate of black and white females, age 20 to 24 years in 1971. This contrasts with a labor force participation rate of 85.9 and 84.0 for white and black males, respectively, in this age group. This 55 percent cutoff was a compromise between one which would allow us to analyze only those persons who were substantially committed to the labor force and one which would maximize our total number of observations. A [illegible] percent rate was attempted as a cutoff, but resulted in totally inadequate sample sizes. See Changes in the Employment Situation in 1972, Special Labor Force Report 152, Bureau of Labor Statistics, U.S. Department of Labor, Washington, D.C., Table A-3.

The Independent Variables. The independent variables used in the various analytical models in this chapter are as follows:

X_1: Curriculum status, where 1 = cooperative vocational curriculum and 0 = not cooperative vocational curriculum;

X_2: Curriculum status, where 1 = academic curriculum and 0 = not academic curriculum;

X_3: Curriculum status, where 1 = general curriculum and 0 = not general curriculum;

X_4: Curriculum status, where 1 = vocational curriculum and 0 = not vocational curriculum;

X_5: Curriculum status, where 1 = curriculum undetermined and 0 = curriculum determined;

X_6: Total months post-high school labor force or non-labor force activity which is not ascertained;

X_7: Sex, where 1 = female and 0 = male;

X_8: Response status, where 1 = long form, mail questionnaire respondent and 0 = personal follow-up;

X_9: College education, where 1 = never attended college and 0 = otherwise;

X_{10}: College education, where 1 = attended (or is attending) college but did not earn (has not earned) a degree and 0 = otherwise;

X_{11}: Total months available for the civilian labor force since leaving high school;

X_{12}: Ethnic origin, where 1 = white and 0 = black and other;

X_{13}: Marital status, where 1 = married and 0 = not married;

X_{14}: Socio-economic status of father's main occupation during the majority of the student's elementary and high school years, on a scale from 0 to 100;

X_{15}: Grade point average, freshman year of high school on a 4.0 scale;

X_{16}: Total academic credits, in units;

X_{17}: Total vocational credits, in units;

X_{18}: Percent of time spent in the civilian labor force since leaving high school;

X_{19}: Percent of time when labor force status is not ascertained since leaving high school;

X_{20}: Graduation cohort, where 1 = 1970 cohort and 0 = 1966 cohort; and,

X_{21}: Father's education in years of schooling completed.

Justification of the Independent Variables. Curriculum status, regressors X_1 through X_5, treats the high school education in dichotomous fashion and is a simple recognition of the assumed qualitative as well as quantitative differences between the cooperative vocational high school program and the non-cooperative comprehensive high school programs. The null hypothesis of this study is that there is no difference between the labor market experience of the cooperative and non-cooperative (comprehensive) high school students. One interprets these dummy variables in the following way: Since attendance in the academic curriculum has a value of one, then a positive sign on the partial regression coefficient of this variable, X_2, indicates that the academic curriculum has a positive effect on the dependent variable in question relative to the cooperative curriculum. If the partial regression coefficient of X_2 has a negative sign, then the academic curriculum has a negative effect relative to the cooperative curriculum.

X_6, total number of months of post-high school labor or non-labor market activity which is not ascertained, is included in selected models below to account for the fact that interviewee errors often left gaps in a person's narrative of his post-high school labor market experience. The statistical sign of this variable is, obviously, ambiguous. X_{19} expresses X_6 as a percentage of total time available for the civilian labor force and is similarly used in the models.

Sex, X_7, is included to account for sex-specific differences in labor market behavior. We have no a priori judgment concerning the sign of this variable for Y_4, but we would expect the sign of the variable to be negative for Y_1, Y_2 and Y_3 since, for instance, the length of time one holds a job is likely to be associated with one's labor force participation rate. The labor force participation rate of women is generally less than that of men as was shown in Chapter Five. Since they are likely to be in the labor force for shorter periods of time than men, other things equal, this fact will reflect itself in the total number of months each job is held as well as in the elasped time before the first job is acquired.

Response status, X_8, is a limited test for non-response bias.[2] We would desire that this variable not be statistically significant, thus indicating that there is no difference between the sample of respondents to the mail questionnaire and the sample of respondents to the personal follow-up questionnaire.

X_9 and X_{10} control for labor market effects due to college attendance. The coefficients of these two variables are interpreted as deviations from the average labor market experience (for a given dependent variable) of those persons who went to some type of two-or four-year college or university and who were graduated. For Y_4 we would expect the signs of X_9 and X_{10} to be negative. That is, college graduates are assumed more likely to have a lower unemployment rate compared to the other two groups. However, since graduation implies a potentially longer time withdrawn from the labor force, especially for full-time students, we would expect those persons who never went to college or who never completed a college degree to be in the labor force longer and have a shorter lapse in time before acquiring the first job.

Total months available for the civilian labor force, X_{11}, is clearly required in the models for dependent variables Y_1, Y_2, Y_3, Y_4, Y_5, Y_6, Y_7, and Y_8. We expect the sign on this variable to be positive. The number of months a person is actually a member of the civilian labor force will correlate with the total number of months he could potentially enter the labor force. Likewise, as one remains in the labor force longer, his wage rate and earnings are likely to rise due to increased experience and on-the-job training.

---

[2] See Appendix G for a further test of non-response bias.

Ethnic origin, X_{12}, is a major determinant of labor force behavior. Blacks are more likely to be unemployed than whites. They also have lower labor force participation rates on the average. Thus, except for Y_1, we would expect the sign on this variable to be positive since whites have, in general, higher wage rates, earnings and employment than blacks. The expected sign for Y_1 is ambiguous.

Marital status, X_{13}, is also a major determinant of labor force behavior. We would expect higher labor force participation and lower unemployment rates for married than for non-married males. Thus, we would expect the sign for this variable to be positive with respect to Y_2, Y_3, Y_5, Y_6, Y_7 and Y_8 and negative for Y_4, percent of time unemployed. The expected sign for Y_1 is ambiguous.

Socio-economic status of the father's main occupation, X_{14}, is intended to account for the influence of socio-economic status of the student on his labor market experience. Again, as socio-economic status rises, we would expect one's unemployment rate to fall. Since socio-economic status correlates with college attendance, the sign of socio-economic status with respect to Y_1 may be positive. Finally, there should be a positive relation between this variable and Y_5, Y_6, Y_7, and Y_8.

Freshman grade point average, X_{15}, is an index of achievement, IQ and motivation. We would expect this variable to have a positive sign vis-a-vis Y_2, Y_3, Y_5, Y_6, Y_7, and Y_8, and be negatively related to Y_4, unemployment rate. However, we should note that with respect to Y_1, in particular, higher achievement, etc. implies a likelihood of additional education. Thus, a potentially longer period out of the labor force is implied before one acquires his first job, so that for Y_1, X_{14} may incorporate both positive and negative effects.

Next, X_{18}, percent of time in the civilian labor force is used to standardize for differences in this characteristic for selected regression models. X_{20}, graduation cohort, is used to standardize for differences in labor market performance due to the fact that we are analyzing samples from two separate labor market time periods.

C. Specification of the Formal Models

Model A: Impact of the Cooperative Curriculum on Total Months Elapsed between Leaving High School and Acquiring One's First Job Lasting One Month or Longer.

Equation (1) for Model A is specified as follows:

$$(1)\quad Y_{1i} = a_{oi} + a_{1i}X_{2i} + a_{2i}X_{3i} + a_{3i}X_{4i} + a_{4i}X_{5i} + a_{5i}X_{6i} + a_{6i}X_{7i} + a_{7i}X_{8i} + a_{8i}X_{9i} + a_{9i}X_{10i} + a_{10i}X_{11i} + a_{11i}X_{12i} + a_{12i}X_{13i} + a_{13i}X_{14i} + a_{14i}X_{15i} + u_i,$$

where the dependent variable and independent variables are defined as above and, $a_0, \ldots, a_{14}$ = partial regression coefficients; u = an error term added to formally complete the model, and i = observations 1, 2, 3,..., n.

Equation (2) of Model A is specified as follows:

$$(2)\quad Y_{1i} = a'_{0i} + a'_{5i}X_{6i} + a'_{6i}X_{7i} + a'_{7i}X_{8i} + a'_{8i}X_{9i} + a'_{9i}X_{10i} + a'_{10i}X_{11i} + a'_{11i}X_{12i} + a'_{12i}X_{13i} + a'_{13i}X_{14i} + a'_{14i}X_{15i} + a'_{15i}X_{1i} + a'_{16i}X_{16i} + a'_{17i}X_{17i} + a'_{18i}(X_{1i}X_{17i}) + u'_i,$$

where the variables, parameters and subscripts are defined as above.

Model B: Impact of the Cooperative Curriculum on Total Months Employed, First Job Since Leaving High School and Model C: Impact of the Cooperative Curriculum on Total Months Employed, Last Job Since Leaving High School are both specified exactly as Model A above.3/

Model D: Impact of the Cooperative Curriculum on Percent of Time Unemployed Since Leaving High School.

Equation (1) of Model D is specified as follows:

$$(1)\quad Y_{4i} = d_{0i} + d_{1i}X_{2i} + d_{2i}X_{3i} + d_{3i}X_{4i} + d_{4i}X_{5i} + d_{6i}X_{8i} + d_{7i}X_{9i} + d_{8i}X_{10i} + d_{9i}X_{12i} + d_{10i}X_{13i} + d_{11i}X_{14i} + d_{12i}X_{15i} + d_{13i}X_{18i} + d_{14i}X_{19i} + d_{15i}X_{20i} + u_i$$

3/ The same model is specified for the estimation of the impact of the cooperative curriculum on total months employed since leaving high school. The results are displayed in Appendix E.

Equation (2) of Model D is specified as follows:

$$(2)\quad Y_{4i} = d'_{0i} + d'_{6i}X_{8i} + d'_{7i}X_{9i} + d'_{8i}X_{10i} + d'_{9i}X_{12i} + d'_{10i}X_{13i}$$
$$+ d'_{11i}X_{14i} + d'_{12i}X_{15i} + d'_{13i}X_{18i} + d'_{14i}X_{19i} + d'_{15i}X_{20i}$$
$$+ d'_{16i}X_{16i} + d'_{17i}X_{17i} + d'_{18i}X_{1i} + d'_{19i}(X_{1i}X_{17i}) + u'_i$$

The variables, parameters and subscripts are defined as above.

Model E: Impact of the Cooperative Curriculum on Average Hourly Wage Rate First Job After Leaving High School and *Model F: Impact of the Cooperative Curriculum on Average Hourly Wage Rate, Last Job After Leaving High School* are both specified as Model A, except that variable X_{21}, Father's Education, is added to Equation (1) and (2) of both models. Finally, *Model G: Impact of the Cooperative Curriculum on Average Monthly Earnings, First Job After Leaving High School* and *Model H: Impact of the Cooperative Curriculum on Average Monthly Earnings, Last Job After Leaving High School* are specified exactly as Model E above.

D. Empirical Results: Analysis of the Models

As in Chapter Six, we shall first discuss the impact of the models in terms of the percent of total variance in the dependent variable which is explained. Then crucial independent variables are discussed as to the degree to which their effects conform with *a priori* judgments. This discussion is confined to Equation (1) of the various models where curriculum is expressed in dummy variable form. This discussion is intended to give one a sense of the quality of the specification of the models used in the analysis. Finally, the impact of the policy variables *per se* is discussed.

Some General Impressions. Tables E-15, E-16, E-22 and E-23 describe the coefficients of determination and F-ratios for Models A, B, C and D which deal with employment. There are wide differences in the amount of variance in the dependent variable, Y_1, which is accounted for by the independent variables in Model A. For the Total Sample, Equation (1) the model explains only seven percent of the variance in total months required to get one's first job after leaving high school (Appendix Table E-22). However, the same model explains 31 percent of the variance for the cohort of Black Females and *none* of the variance for Black Males. In general, the model accounts for less variance in the dependent variable, Y_1, for males than for females. Also, there are no marked differences in the amount of variance explained by Equation (1) and Equation (2).

Next, we should note that Models B and C explain much more of the variance in the dependent variables, Y_2 and Y_3 than does Model A for Y_1. In addition, the equations for these latter two models have a much higher level of statistical significance. (See Appendix Tables E-15 and E-16). Equations (1) and (2) perform similarly for these latter two models. The amount of variance explained ranges in the neighborhood of 20 percent but is around 50 percent for Black Males. Finally, Model D which is designed to estimate the impact of the cooperative curriculum on the percent of time unemployed since leaving high school most typically explains about 20 percent of the variance in the dependent variable. However, for Black Males, the amount of variance explained is 56 percent while it is nine percent for 1966 Cohort Males. Indeed, for this latter subgroup the F-ratio for the equation is only 1.68 and indicates that the model is not statistically significant.

Appendix Tables E-29, E-30, E-36 and E-37 show the coefficients of determination and F-ratios for Models E, F, G and H which estimate the impact of the cooperative curriculum on average hourly wage rates and average monthly earnings. For average hourly wage rate, the amount of variance explained ranges from the low 'teens to as high as 50 percent. In some cases, as with the 1966 Cohort Females the model is not statistically significant. The models explain somewhat more of the variance in earnings than in wage rates.

Finally, for some models, the level of significance and amount of variance explained increases when one compares the first with the last job. This is the case for the White Males, where the coefficient of determination rises from 15 percent to 30 percent when one compares models estimating the effect of the cooperative curriculum on the wage rate of the first and the last job. For the 1966 Black Cohort however the coefficient declines from 50 percent on the first job to effectively zero on the last job. The same pattern is true of 1970 Cohort Blacks. Clearly, the same set of variables which effectively explain the behavior of whites do not explain well the behavior and experience of blacks. One can only speculate as to the reasons for this but one possibility is that rewards in the market place are not based on the same set of objective standards for blacks as for whites.

Effects of Selected Independent Variables. Apart from the ability of a model to account for the variance in the dependent variable, one also gains confidence in the model specification if the independent variables behave in conformity with a priori theoretical notions or are consistent with past behavior in other labor market research. To this end, we continue with the following analysis.

First, we should note that there are no statistically significant differences in the employment experiences of whites and blacks for the Total Sample, Male or Female subgroups. The same statement is true for the regression models of average hourly wage rate and average monthly earnings on first and last job since leaving high school, respectively.

With respect to sex, for the Total Sample women have about three months less employment on their longest and last jobs since leaving high school, but there is no difference between the sexes for the first job since leaving high school. This is a reasonable finding to the extent that the last and longest job may occur later in a women's life cycle when childbearing and family duties begin competing for her time. There are large significant differences between the sexes with respect to wage rate and earnings. For example, women earn about 50 cents an hour less than males on the first job and 61 cents an hour less on the last job held since leaving high school. In terms of average monthly earnings, this translates into $118 per month less on the first job and $143 per month less on the last job. For the longest job held since leaving high school women earn an average of $151 per month less than men.

Marital status is another crucial determinant of labor market behavior. With respect to employment, married males hold their longest and last jobs four and three months longer, respectively, than non-married males. In contrast, married and unmarried females show no statistically significant differences on total months employed on first, last and longest jobs. However, compared to unmarried females, married females have about three and a half (3.6) months less total employment since leaving high school. In terms of average hourly wage rate married males earn from 33 to 36 cents an hour more than unmarried males. This translates into average monthly earnings differentials on the first, last and longest jobs held of $68, $85 and $66, respectively. For married white males, these differences are even larger. However, we should note that there is no difference in the unemployment behavior of married and unmarried black males. A sample size of only 61 could account for this lack of statistically significant difference in black males. In contrast, married white males are unemployed 5.4 percent less than unmarried white males.

Finally, in this discussion of unemployment we would like to point out that the 1970 cohort of students is unemployed considerably more than the 1966 cohort of students; For the Total Sample, the 1970 cohort has an unemployment 12 percent higher, for Males, 9.3 percent higher, and for Females, 13.4 percent higher than the respective groups in the 1966 cohort. These characteristics are carried over into the models which analyze wage rates and earnings. As one would expect, the 1970 cohort earns a lower average hourly wage rate as well as lower monthly earnings on the last job held and the longest job held, while there is no difference in wage rates and earnings on the first job held. Note that the two cohorts are most comparable in terms of the relative quantities of experience and on-the-job training when each enters the labor market for the first time.

Socio-economic status of the father's occupation is never statistically significant for any regression model which analyzes the impact of the cooperative program on the selected employment variables. This holds for the Total Sample and the sample subgroups, other than Whites and White Females. However, this variable is significant with respect to the earnings and wage rate models. For Black Males, for instance, a one point increase in the socio-economic status of the father's occupation leads to a 14 cent an hour decrease in the wage rate of the last job. Differences in occupational choice as a function of socio-economic status may account for this.

Father's education is also seldom statistically significant. However, it is highly significant for the sample subgroup of students who have completed some non-college post-secondary education. In terms of average hourly wage rate, a one year increase in father's education for this group results in a seven to nine cent an hour wage rate increase. This translates into $13 to $17 more in average monthly earnings.

The final variables of interest in this discussion are X_9 and X_{10}, which relate to whether or not one attended college and, if so, whether or not a degree was earned. In terms of the unemployment rate, there is no difference between those who never attended college and those who attended and have a degree. This is true for all sample subgroups in the analysis. However, for the Total Sample and Males, those who have attended college but not earned a degree are unemployed about seven percent less than the persons in their comparable groups who did attend college and earned a degree.

This result is not consistent with our a priori expectations. However, we are unable to supply any reasonable hypothesis for these contrary results other than the possibility that those who earned degrees were full-time students who often claimed to be unemployed when, in fact, they were not members of the labor force. (This, of course, gets us into difficult definitional problems as to what constitutes job search even though we attempted to follow the labor force classifications of the current population survey in this study.)

Of course, as one would expect, those who did not go to college or who attended but did not earn a degree are employed more months on their first, last and longest jobs. This is true for the Total Sample, Males and Females. Also, as one might expect, less time elapsed between leaving high school and acquiring one's first job for these two groups relative to the group which earned a degree.

However, of major interest is the differences in wage rates between the groups. For the Total Sample there is no difference in average hourly wage rate on the last job when one compares those who have not gone to college with those who have and who have also earned a degree. However, persons who have gone to college and not earned a degree earn about 32 cents per hour less on their last job than those who have earned a degree.

For Males, there is no difference in average hourly wage rate when one makes the above comparisons. However, we see that for Females, those who have never gone to college earn about 52 cents an hour less than those who have a college degree. Those women who have been (and may still be attending) college earn about 67 cents an hour less than those women who have their degree. In summary, these results suggest that the education variables do not always account well for the characteristic they attempt to measure since persons who have some college but have not earned a degree could still be in college. Also, we do not control for the type of degree earned. This creates the possibility for both positive and negative forces to operate within the variable set.

E. Empirical Effects: Employment

Impact of Policy Variables: Model A. As discussed previously, the total months lapsed between leaving high school and acquiring one's first job is an index of the opportunity cost of not having a job over this time period. These costs are comprised of foregone earnings incurred during direct job search or due to the pursuit of additional education or to other non-labor force activity. And, of course, this index says nothing of the benefits that might be gained due to incurring these costs. Nevertheless, the variable is of some interest in showing the pattern of investment cost prior to taking one's first job. Tables 61 and 62 as well as Appendix Table E-17 display the effects of the different curricula on this dependent variable.

The most notable aspect of this analysis is the general lack of statistically significant differences between the cooperative curriculum and the other three secondary curricula with respect to total months elapsed. 1970 Cohort Females who pursue the academic curriculum take 2.5 months longer to locate their first job and 1970 Cohort Whites in the academic curriculum take 1.6 months longer vis-a-vis their cooperative counterparts. But there are no other statistically significant differences between cooperative and vocational students. However, there is one interesting difference. When one compares the cooperative students against the general students for the subgroup which has had no post-secondary education, cooperative students find their first jobs 3.3 months sooner than general students. Of course, general students in this subgroup may simply have voluntarily withdrawn from the labor market for this time period. If so, they presumably did so because they perceived benefits to be gained from the increased leisure or non-market activity. However, this opportunity cost outlay to the general student, again in this subgroup, amounted to about 269 dollars per month or about 888 dollars ($269 · 3.3 months) based on the findings in Table 73.

Curriculum Structure: Model A. When we analyze the effect of curriculum structure on the total months elapsed before acquiring the first job

TABLE 61

IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, TOTAL MONTHS ELAPSED BETWEEN LEAVING HIGH SCHOOL AND ACQUIRING ONE'S FIRST JOB

	Coop-erative	Academic	General	Vocational	Unde-termined	Grand Mean
Total Sample	-.2	-.1	1.1	-.6	4.5	6.7
Males	.5	-.1	.1	-.4	.2	6.6
Females	-1.1	.1	2.1	-.9	-.2	6.7
White Males	1.0	.4	-1.2	-.9	2.0	6.4
White Females	-1.0	.9	1.4	-1.1	4.2	7.0
Black Males	-6.5	-5.4	4.0	2.5	-4.9	8.3
Black Females	-2.4	-1.8	2.8	-1.0	24.4	5.7
1966 Cohort Males	2.3	-.4	-.9	-1.0	-2.4	9.2
1970 Cohort Males	-.4	.5	-.2	-.5	4.6	3.5
1966 Cohort Females	-1.0	-1.0	8.1	-1.5	6.1	10.4
1970 Cohort Females	-1.2	1.4	-.4	-.3	2.6	3.7
1966 Cohort White	.7	-.0	1.6	-1.9	5.1	9.6
1970 Cohort White	-.7	.9	-.8	-.1	5.2	3.6
1966 Cohort Black	-1.9	-6.1	4.4	3.1	21.9	10.8
1970 Cohort Black	-.4	.4	1.1	-.9	1.3	3.5

TABLE 61

Impact of High School Curricula Expressed as Deviations from the Grand Mean of the Study Sample, Total Months Elapsed Between Leaving High School and Acquiring One's First Job (con't.)

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
All Cooperative Samples plus Non-cooperative Vocational Education Samples	1.3	---	---	-1.3	---	6.0
College Graduates	1.6	-.1	1.3	-3.5	8.7	11.3
California Mental Maturity IQ Less than 100	-1.8	-5.9	.8	1.7	-6.1	7.3
Those Who have had No Post High School Education	-1.7	-1.5	1.6	.5	4.8	4.2
Persons Who have Completed some Non-college Post High School Education	2.8	-.8	1.2	-3.7	2.8	9.8

TABLE 62
EFFECT OF CURRICULUM STRUCTURE ON MONTHS ELAPSED BETWEEN LEAVING HIGH SCHOOL AND ACQUIRING FIRST JOB LASTING ONE MONTH OR LONGER

	Academic Credits	Vocational Credits	Cooperative Status	Cooperative Credits	Number of Obser- vations
Total Sample	-.27 (.15)	-.64** (.23)	6.19** (2.20)	-.67 (.37)	868
Males	-.14 (.25)	-.40 (.37)	3.33 (4.11)	-.27 (.71)	391
Females	-.41* (.18)	-.94** (.29)	6.73* (2.61)	-.60 (.43)	477
White Males	-.17 (.25)	-.55 (.40)	3.64 (4.08)	-.14 (.71)	338
White Females	-.26 (.21)	-.90** (.34)	7.39** (2.85)	-.71 (.48)	389
Black Males	.35 (1.00)	.52 (1.17)	-2.83 (26.34)	-.66 (3.97)	53
Black Females	-.90** (.33)	-.90 (.52)	-5.23 (7.41)	.96 (1.15)	88
1966 Cohort Males	-.21 (.43)	-.51 (.64)	-1.85 (6.57)	1.16 (1.28)	217

TABLE 62
Effect of Curriculum Structure on Months Elapsed between Leaving High School and Acquiring First Job lasting One Month or Longer (continued)

	Academic Credits	Vocational Credits	Cooperative Status	Cooperative Credits	Number of Obser-vations
1970 Cohort Males	-.15 (.16)	-.37 (.22)	4.14 (3.14)	-.61 (.47)	174
1966 Cohort Female	1.08** (.37)	-1.99** (.61)	10.92* (4.21)	-1.25 (.79)	217
1970 Cohort Female	-.16 (.14)	-.48* (.22)	-4.23 (2.79)	.65 (.39)	260
1966 Cohort White	-.42 (.29)	-1.20* (.47)	9.38* (3.64)	-.99 (.70)	372
1970 Cohort White	-.15 (.12)	-.46* (.19)	-1.21 (2.16)	.25 (.32)	355
1966 Cohort Black	-.36 (.72)	-1.03 (1.17)	-2.78 (13.87)	.49 (2.77)	62
1970 Cohort Black	.22 (.22)	-.21 (.26)	-3.39 (6.56)	.58 (.89)	79

TABLE 62

Effect of Curriculum Structure on Months Elapsed between Leaving High School and Acquiring First Job lasting One Month or Longer (continued)

	Academic Credits	Vocational Credits	Cooperative Status	Cooperative Credits	Number of Observations
All Cooperative Samples plus Non-cooperative Vocational Education Samples	-.43 (.26)	-.61 (.48)	7.71* (3.39)	-.92 (.53)	441
College Graduates	-.50 (.57)	-1.76 (1.12)	-1.21 (9.62)	1.69 (2.33)	117
Persons with California Mental Maturity IQ Less than 100	-.65 (.47)	-.02 (.59)	-3.83 (6.79)	.23 (1.06)	155
Those Who have had No Post High School Education	-.97** (.19)	-.38 (.26)	-.21 (2.99)	-.08 (.44)	304
Persons Who have Completed Some Noncollege Post High School Education	-.49 (.64)	-1.17 (.80)	17.88* (7.73)	-1.92 (1.42)	117

TABLE 62

Effect of Curriculum Structure on Months Elapsed between Leaving High School and Acquiring First Job lasting One Month or Longer (continued)

Notes: The statistics are the partial regression coefficient and its standard error in parenthesis.

* = significant at the .05 level.

** = significant at the .01 level.

lasting one month or longer we see that cooperative vocational credits have no statistically significant impact. Thus, their effect is no different from vocational credits earned in non-cooperative high schools. However, for certain subgroups, cooperative students require more time to acquire their first job. An inspection of Table 62 shows that it is the 1966 white female cohort which, for some undetermined reason, required considerably longer to acquire its first job than did its non-cooperative counterpart. Black cooperative females took somewhat less than five months (5.23) to find their first job compared to non-cooperative black females. On the other hand, it is vocational credits earned by the 1966 cohort of white females which result in a reduction in the months lapsed between leaving school and acquiring one's first job. For White Females, earning an additional vocational credit reduces the total months lapsed by .9 of one month. For cooperative White Females, if they earn eight vocational credits more than the average for the non-cooperative students, this would effectively counteract the increase of 7.39 months longer time lapse required to acquire the first job. On net, if we look at Table 61 again, we see that the average time this subgroup requires to acquire its first job is approximately six months (7.0 - 1.0). Finally, when we inspect Table 62 further we see that for Persons Who Have Completed Some Non-college Post-High School Education, cooperative students require about 18 more months to acquire their first job than do non-cooperative students, once the effect of the course credit structure is accounted for. But, absent this control for curriculum structure, this same cooperative group requires about a year (12.6 months) to acquire its first job. Apparently, when cooperative students do acquire post-secondary education, they gain more of it in terms of elapsed months than do the other non-cooperative curricula. This could, of course, be due to going to school part-time and extending one's total enrollment time.

Impact of Policy Variables for Model B: Total Months Employed on First Job. Academic students in the Total Sample are employed 5.6 months less on their first job than are cooperative students (Appendix Table E-10). This effect is due to the Male subgroup--namely the 1966 and 1970 cohort of white males. This pattern in favor of cooperative males holds up across the general and vocational curricula, too. Thd differences among the curricula for the College Graduates subgroup is striking; cooperative students are employed about 20 months longer on the first job compared to each of the other three curricula. Looking at Table 63, for this group of College Graduates, cooperative students are employed an average of 26.7 months on their first job while academic and general students are employed about seven months and vocational students only about five and one half (9.7 - 4.2) months. These average levels of employment are based on the data in Appendix Table E-10, where we see that on the average, cooperative students are employed 19.5 months more than academic students and about 21.1 months more than vocational students who are college graduates.

TABLE 63

IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, TOTAL MONTHS EMPLOYED ON THE FIRST JOB SINCE LEAVING HIGH SCHOOL

	Coop-erative	Academic	General	Vocational	Unde-termined	Grand Mean
Total Sample	3.8	-1.9	-1.3	-.5	-1.2	12.3
Males	5.4	-2.2	.1	-1.7	-6.5	12.3
Females	2.3	-1.2	-2.5	.7	4.4	12.4
White Males	5.7	-2.2	-1.6	-1.5	-8.5	12.4
White Females	2.1	-1.2	-2.6	.2	5.8	13.0
Black Males	-.6	-4.6	7.5	-2.6	9.4	11.3
Black Females	2.5	-1.2	-1.5	2.1	-10.0	9.4
1966 Cohort Males	10.5	-5.6	2.1	-3.6	-11.4	15.9
1970 Cohort Males	1.5	-1.0	-1.6	1.1	-3.7	7.7
1966 Cohort Females	2.9	-2.3	-2.3	-.6	10.9	17.5
1970 Cohort Females	.9	-.1	-1.4	1.0	-4.3	8.1
1966 Cohort White	6.6	-4.4	-1.7	-2.0	1.7	16.9
1970 Cohort White	1.2	-.9	-1.4	1.3	-3.5	8.4
1966 Cohort Black	8.0	-7.0	7.2	1.3	-9.5	15.5
1970 Cohort Black	1.3	.4	-1.8	.8	-2.5	6.1

TABLE 63

Impact of High School Curricula Expressed as Deviations from the Grand Mean of the Study Sample, Total Months Employed on the First Job since Leaving High School (continued)

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
All Cooperative Samples plus Non-cooperative Vocational Education Samples	2.0	---	---	-2.1	---	15.0
College Graduates	17.0	-2.5	-2.6	-4.2	-7.5	9.7
California Mental Maturity IQ Less than 100	4.0	-5.7	1.2	-1.9	-5.1	12.9
Those Who have had No Post High School Education	1.8	1.4	-1.6	-.9	-.3	13.7
Persons Who have Completed some Non-college Post High School Education	2.0	-10.0	.6	1.6	2.0	15.5

Finally, we see from an inspection of Table 63 and Appendix Table E-10 that there are no differences among the curricula for Black Males and Black Females. This holds for the 1970 and 1966 Cohort Females and Blacks, also.

Effect of Curriculum Structure. What effect do the cooperative curriculum and cooperative vocational credits have on total months employed on the first job? As Table 64 shows, academic and vocational credits have no statistically significant effect for the Total Sample and Males and Females. Cooperative vocational credits likewise have no effect. However, membership in the cooperative curriculum results in one having a first job which lasts about eight months longer than that of a non-cooperative student. And, as one can see, this effect is due to the males and not the females in the study sample. We find for White Males that enrollment in the cooperative curriculum increases tenure in the first job by about 20 months for this sample subgroup.

Finally, we should note that curriculum structure has no effect on the total months employed on the first job for all Cooperative Samples plus Non-cooperative Vocational Education Samples, Those Who Have Had No Post-Hihg School Education and Persons Who Have Completed some Non-college Post-High School Education. This suggests that as the sample groups become more homogenous, the curriculum structure has no detailed effects on labor market behavior. There is the possibility that among a given population of students, there is so little variance in the curriculum structure that the structure effectively becomes a constant and therefore shows no relation between it and the dependent labor market variables. However, an inspection of the raw data suggests that the variance in the curriculum structure is considerable. For instance, the mean academic credits for the cooperative and non-cooperative vocational subgroup is 10.6 with a standard deviation of 2.5. For this same sample subgroup, the mean number of vocational credits is 5.6 with a standard deviation of 2.3.

Model C: Impact of Policy Variables on Total Months Employed on the Last Job Lasting One Month or Longer Since Leaving High School. Tables 65, 66 and Appendix Table E-14 display the results of the analysis for total months employed on the last job since leaving high school. The results of this analysis are similar to those reported for Model B, Total Months Employed on the First Job Lasting One Month or Longer Since Leaving High School. Generally, the mean months each sub-sample is employed are longer for the last job than for the first job, as one might expect. And, the differences in total months employed on the last job are smaller for the last as compared to the first job when one contrasts the cooperative students with the academic students for the Total Sample, Males and Females (Tables 63 and 65). This is also true when one contrasts the cooperative students with the vocational students for these three sample subgroups.

TABLE 64
EFFECT OF CURRICULUM STRUCTURE ON TOTAL MONTHS EMPLOYED, FIRST JOB AFTER LEAVING HIGH SCHOOL

	Academic Credits	Vocational Credits	Cooperative Status	Cooperative Credits	Number of Obser-vations
Total Sample	.02 (.18)	.47 (.28)	8.13** (2.70)	-.68 (.46)	868
Males	.19 (.29)	.38 (.43)	17.53** (4.76)	-1.59 (.82)	391
Females	-.01 (.24)	.71 (.37)	2.62 (3.39)	-.39 (.56)	477
White Males	.34 (.31)	.41 (.48)	20.20** (4.90)	-1.93* (.86)	338
White Females	.04 (.27)	.81 (.44)	.21 (3.69)	-.10 (.63)	389
Black Males	-.71 (.83)	-.23 (.96)	-29.14 (21.78)	4.19 (3.28)	53
Black Females	-.22 (.42)	.44 (.68)	32.22** (9.61)	-4.89** (1.49)	88
1966 Cohort Males	.34 (.51)	-.05 (.76)	20.97** (7.79)	-1.27 (1.52)	217

TABLE 64

Effect of Curriculum Structure on Total Months Employed, First Job After Leaving High School (continued)

	Academic Credits	Vocational Credits	Cooperative Status	Cooperative Credits	Number of Obser-vations
1970 Cohort Males	-.03 (.19)	.84** (.27)	-.91 (3.83)	.05 (.58)	174
1966 Cohort Female	-.48 (.49)	.31 (.81)	1.35 (5.58)	.42 (1.04)	217
1970 Cohort Female	.29 (.18)	.69* (.28)	1.59 (3.56)	-.53 (.49)	260
1966 Cohort White	.00 (.37)	.40 (.59)	6.83 (4.55)	.25 (.87)	372
1970 Cohort White	.07 (.15)	.85** (.24)	2.59 (2.78)	-.66 (.41)	355
1966 Cohort Black	-.88 (.86)	-.11 (1.39)	35.40* (16.51)	-6.33 (3.30)	62
1970 Cohort Black	.04 (.26)	.37 (.31)	-8.76 (7.98)	1.14 (1.08)	79

TABLE 64

Effect of Curriculum Structure on Total Months Employed, First Job After Leaving High School (continued)

	Academic Credits	Vocational Credits	Cooperative Status	Cooperative Credits	Number of Observations
All Cooperative Samples plus Non-cooperative Vocational Education Samples	.13 (.33)	.38 (.60)	5.25 (4.28)	-.29 (.74)	441
College Graduates	.14 (.44)	-.38 (.37)	17.51* (7.47)	.77 (1.81)	119
Persons with California Mental Maturity IQ less than 100	.47 (.49)	-.52 (.62)	17.19* (7.15)	-1.43 (1.12)	155
Those Who have had No Post High School Education	.30 (.32)	.17 (.46)	-.79 (5.21)	.26 (.77)	304
Persons Who have Completed some Non-college Post High School Education	-.10 (.73)	.38 (.91)	-3.78 (8.83)	1.24 (1.63)	117

TABLE 64

Effect of Curriculum Structure on Total Months Employed, First Job after Leaving High School (continued)

Notes: The statistics are the partial regression coefficient and its standard error in parenthesis.

* = significant at the .05 level.

** = significant at the .01 level.

TABLE 65

IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, TOTAL MONTHS EMPLOYED ON THE LAST JOB SINCE LEAVING HIGH SCHOOL

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
Total Sample	2.2	-1.1	-1.1	-.0	-.2	14.4
Males	2.6	-2.0	.5	-.5	6.5	15.4
Females	2.0	-.6	-2.5	.5	-1.8	13.7
White Males	3.0	-1.8	-1.4	-.1	7.5	15.5
White Females	2.3	-1.5	-2.4	.6	-.7	13.8
Black Males	-4.6	-6.7	11.2	-2.8	9.3	14.2
Black Females	-1.1	1.0	-2.2	1.5	-4.2	5.7
1966 Cohort Males	2.5	-3.0	4.1	-1.9	17.5	21.2
1970 Cohort Males	2.2	-1.0	-2.4	1.0	-4.4	8.2
1966 Cohort Females	2.2	-1.2	-2.8	-.4	6.7	19.9
1970 Cohort Females	1.2	-.6	-.9	1.0	-11.0	8.4
1966 Cohort White	3.0	-2.6	-1.0	-.5	6.8	20.1
1970 Cohort White	1.7	-1.3	-1.1	1.3	-7.2	8.8
1966 Cohort Black	-8.8	-1.9	5.9	-.6	-5.9	23.2
1970 Cohort Black	1.7	.8	-1.9	.6	-3.2	6.2

TABLE 65

Impact of High School Curricula Expressed as Deviations from the Grand Mean of the Study Sample, Total Months Employed on the Last Job since Leaving High School (continued)

	Coop-erative	Academic	General	Vocational	Unde-termined	Grand Mean
All Cooperative Samples plus Non-cooperative Vocational Education Samples	1.0	---	---	-1.0	---	16.9
College Graduates	3.3	-.2	2.9	-3.9	-4.5	10.1
California Mental Maturity IQ Less than 100	1.6	-4.1	2.0	-2.1	15.7	16.2
Those Who have had No Post High School Education	1.8	1.2	-1.2	-1.1	-.2	16.6
Persons Who have Completed some Non-college Post High School Education	1.7	-4.4	.0	.1	---	18.6

Again, looking at Appendix Table E-14 we see that the difference in performance between the cooperative and academic students is due to the labor market behavior of White Males. Also, it is quite important to note that we see no statistically significant differences between cooperative and vocational curriculum students, regardless of which sample subgroup one chooses to inspect. Next, we note that cooperative students in the Total Sample have the same advantage in total months worked over general students as they have over academic students. Cooperative students work an average of 16.6 months on their last job while the other two sets of students work only 13.3 months. In the case of the general students, this difference is due to White Females and 1970 Cohort Males.

Finally, we should note that for the Total Sample, the absolute increase

Total Sample

Total Months Employed:	Cooperative	Academic	General	Vocational
First Job	16.1	10.4	11.0	11.8
Last Job	16.6	13.3	13.3	14.4
Absolute Increase	.5	2.9	3.3	2.6
Percent Increase	3.1	27.9	30.0	22.0

in months worked is least for the cooperative students and highest for general students. Likewise, the percentage increase is least for cooperative students and highest for general curriculum students. Finally, the relative advantage of the cooperative students vis-a-vis the other three curricula is considerably less for the last job than for the first job.

Effect of Curriculum Structure. The impact of curriculum structure is similar between Model B and C.(See Table 66.) Academic credits earned have no effect on total months employed on one's last job, regardless of the sample subgroup one inspects. Enrollment as a cooperative student (cooperative status) has a positive impact on total months employed for the Total Sample but this effect is due to the Black Females in the Study sample. We should note finally that curriculum structure has no effect for the relatively homogenous sample subgroups of College Graduates, Those Who Have Had No Post-High School Education, and Persons Who have Completed some Non-college Post-High School Education.

Model D: Impact of the Cooperative Curriculum on Percent of Time Unemployed Since Leaving High School. The percent of time unemployed is the least ambiguous index of program effect among the various employment measures. It is a measure of the time spent looking for work but not able to find work and is a crude index of one's overall economic well-being. In addition, it is a widely accepted index of welfare across the

TABLE 66
EFFECT OF CURRICULUM STRUCTURE ON TOTAL MONTHS EMPLOYED, LAST JOB AFTER LEAVING HIGH SCHOOL

	Academic Credits	Vocational Credits	Cooperative Status	Cooperative Credits	Number of Observations
Total Sample	.07 (.18)	.88** (.29)	5.72* (2.76)	-.93* (.47)	868
Males	-.31 (.29)	.58 (.44)	6.65 (4.82)	-.79 (.83)	391
Females	.34 (.23)	1.28** (.37)	5.21 (3.53)	-1.17* (.55)	477
White Males	-.26 (.31)	.68 (.48)	9.08 (4.91)	-1.10 (.86)	338
White Females	.38 (.27)	1.44** (.43)	5.18 (3.63)	-1.20 (.62)	389
Black Males	-1.15 (.99)	-.33 (1.15)	-45.53 (26.02)	5.55 (3.92)	53
Black Females	-.09 (.43)	1.40* (.69)	23.89* (9.79)	-4.89** (1.52)	88
1966 Cohort Males	-.79 (.52)	.46 (.77)	10.23 (7.87)	-1.70 (1.54)	217

TABLE 66

Effect of Curriculum Structure on Total Months Employed, Last Job after Leaving High School (continued)

	Academic Credits	Vocational Credits	Cooperative Status	Cooperative Credits	Number of Obser-vations
1970 Cohort Males	.04 (.19)	.79** (.26)	1.787 (3.89)	.37 (.53)	174
1966 Cohort Female	.22 (.49)	1.47 (.82)	6.78 (5.60)	-1.35 (1.05)	217
1970 Cohort Female	.12 (.17)	.32** (.27)	1.52 (3.40)	-.58 (.47)	260
1966 Cohort White	.00 (.37)	1.10 (.59)	6.63 (4.60)	-.99 (.89)	372
1970 Cohort White	.02 (.15)	.92** (.24)	2.60 (2.73)	-.62 (.40)	355
1966 Cohort Black	-.60 (.93)	1.66 (1.50)	24.16 (17.89)	-8.43* (3.58)	62
1970 Cohort Black	-.07 (.24)	.34 (.28)	-5.65 (7.26)	.74 (.99)	79

TABLE 66

Effect of Curriculum Structure on Total Months Employed, Last Job after Leaving High School (continued)

	Academic Credits	Vocational Credits	Cooperative Status	Cooperative Credits	Number of Observations
All Cooperative Samples plus Non-cooperative Vocational Education Samples	.12 (.33)	1.56* (.61)	8.45 (4.34)	-1.44 (.75)	441
College Graduates	.29 (.45)	-2.8 (.39)	-2.68 (7.63)	1.80 (1.35)	119
Persons with California Mental Maturity IQ Less than 100	-.26 (.55)	-.06 (.69)	3.19 (7.92)	-.12 (1.24)	155
Those Who have had No Post High School Education	.46 (.34)	.48 (.48)	5.31 (5.40)	-.75 (.80)	304
Persons Who have Completed some Non-college Post High School Education	.29 (.72)	.48 (.90)	-4.49 (8.69)	1.20 (1.60)	117

TABLE 66
Effect of Curriculum Structure on Total Months Employed, Last Job after Leaving High School (continued)

Notes: The statistics are the partial regression coefficient and its standard error in parenthesis.

* = significant at the .05 level.

** = significant at the .01 level.

community at large. However, it is not a perfect welfare index because it measures only one aspect of a person's well-being. Also, from a measurement standpoint it is difficult to estimate the intensity at which one attempts to find a job. Clearly, everyone does not experience the same pain cost due to unemployment. In regard to search intensity, the present study is not as consistent as it should be with the definition of unemployment used in the Current Population Survey since the matter of intensity of job search is not considered. A person is simply identified as employed, unemployed or not-in-the-labor force based on his current activity, e.g., a full-time student with no job is not in the labor force. However, in terms of determination of labor force status as a function of activity, the present study is consistent with the Current Population Survey.

Tables 67, 68 and Appendix Table E-21 display the estimated results. On net, cooperative students are unemployed 9.7 percent over the period since they left high school. This contrasts with 15.7 percent for academic students and 15.8 percent for general students (Table 67, Total Sample). Again, it bears noting that there is no statistically significant difference in the unemployment rate of the cooperative and vocational curriculum students regardless of the sample subgroups one chooses to inspect. (See Appendix Table E-21.) The differences between the cooperative and the academic curriculum are due to the differential experience of Males and 1966 Cohort Females. The differences between the cooperative and the general curriculum, likewise, are due to the experiences of Males, and, particularly Black Males. However, the small sample size for the Black Male sub-sample results in estimates which are relatively unreliable. There are only five black male cooperative students in this sub-sample. This unreliability is evidenced by the fact that the unemployment rate for black cooperative males is less than zero (19.8 - 23.2 = 3.4), a clear impossibility since the lower bound of this variable is constrained at zero percent. (Again, we ignore the undetermined curriculum category since it has no unambiguous conceptual meaning. Also, its sample sizes are small which results in estimates which exceed the bounds of the dependent variable).

Finally, we should note that for the sub-sample of students who were members of the labor market at least 55 percent of the time, there are no statistically significant differences in the unemployment rates between the cooperative and the other three curricula for either the Total Sample, Males, Females, Whites or Blacks and other. This lack of statistical significance could be due in part to small sample sizes, however. (See Appendix Table E-40).

Effect of Curriculum Structure. Table 68 displays the effect of curriculum structure on the percent of time unemployed. We note first that there is no change in the percent of time unemployed as the number of cooperative vocational credits changes regardless of the sample subgroup

TABLE 67
IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, PERCENT OF TIME EMPLOYED SINCE LEAVING HIGH SCHOOL

	Coop-erative	Academic	General	Vocational	Unde-termined	Grand Mean
Total Sample	-2.8	3.2	3.3	-3.4	-5.6	12.5
Males	-3.1	3.1	4.9	-3.3	-19.7	12.3
Females	2.7	3.2	2.1	-3.1	6.7	13.5
White Males	-2.1	3.8	1.6	-3.5	-15.6	10.0
White Females	-2.0	3.9	-.5	-3.0	11.5	10.0
Black Males	-23.2	-1.6	13.7	-.8	-52.6	19.8
Black Females	-11.4	-.4	6.4	-2.7	4.9	27.2
1966 Cohort Males	-2.5	.5	3.8	-.8	-6.7	5.6
1970 Cohort Males	-3.5	5.5	5.5	-5.4	-27.6	17.1
1966 Cohort Females	-3.6	2.8	1.5	-.6	12.4	4.7
1970 Cohort Females	-1.5	5.5	.4	-6.7	8.1	19.8
1966 Cohort White	-2.4	1.9	2.2	-1.1	6.5	4.4
1970 Cohort White	-.6	5.7	-2.2	-6.4	-5.9	15.0
1966 Cohort Black	-15.1	1.3	2.7	-.8	.3	9.8
1970 Cohort Black	-7.9	11.1	24.8	-23.4	-43.5	33.4

TABLE 67

Impact of High School Curricula Expressed as Deviations from the Grand Mean of the Study Sample, Percent of Time Employed Since Leaving High School (continued)

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
All Cooperative Samples plus Non-cooperative Vocational Education Samples	-.0	---	---	.0	---	10.4
College Graduates	-.4	.3	-3.7	1.1	-5.1	5.1
California Mental Maturity IQ Less than 100	-6.1	-6.6	7.9	-2.0	-17.0	18.8
Those Who have had No Post High School Education	-1.6	1.7	5.3	-2.7	-5.3	19.0
Persons Who have Completed some Non-college Post-High School Education	-4.6	-.5	2.0	3.5	---	8.2

TABLE 68

EFFECT OF CURRICULUM STRUCTURE ON PERCENT OF TIME UNEMPLOYED

	Academic Credits	Vocational Credits	Cooperative Status	Cooperative Credits	Number of Obser- vations
Total Sample	-.002 (.003)	-.012* (.005)	-.046 (.044)	.010 (.008)	1000
Males	.003 (.004)	-.004 (.007)	-.003 (.075)	-.001 (.013)	445
Females	-.007 (.004)	-.018** (.007)	-.053 (.060)	.014 (.010)	555
White Males	.003 (.004)	.001 (.007)	-.003 (.074)	-.001 (.013)	385
White Females	-.008* (.004)	-.021** (.007)	-.064 (.058)	.019 (.010)	441
Black Males	.003 (.015)	-.021 (.018)	-.014 (.421)	-.020 (.064)	60
Black Females	-.006 (.011)	-.012 (.016)	-.136 (.270)	.009 (.041)	114
1966 Cohort Males	.004 (.003)	-.000 (.006)	-.041 (.057)	.003 (.011)	227
1970 Cohort Males	-.001 (.008)	-.011 (.012)	.079 (.172)	-.010 (.026)	218

TABLE 68

Effect of Curriculum Structure on Percent of Time Unemployed (continued)

	Academic Credits	Vocational Credits	Cooperative Status	Cooperative Credits	Number of Obser-vations
1966 Cohort Females	-.002 (.003)	-.010 (.005)	-.065 (.039)	-.008 (.007)	223
1970 Cohort Females	-.008 (.007)	-.028 (.011)	-.020 (.138)	.020 (.019)	322
1966 Cohort White	-.000 (.002)	-.006 (.004)	-.050 (.031)	-.006 (.006)	395
1970 Cohort White	-.006 (.005)	-.016 (.009)	.032 (.102)	.006 (.015)	431
1966 Cohort Black	.003 (.007)	.006 (.013)	-.160 (.154)	-.003 (.031)	65
1970 Cohort Black	-.008 (.013)	-.031 (.016)	.098 (.471)	-.016 (.064)	109
All Cooperative Samples plus Non-cooperative Vocational Education Samples	-.013** (.005)	-.007 (.008)	.014 (.060)	.001 (.010)	493
College Graduates	.001 (.005)	.010 (.010)	-.021 (.092)	-.001 (.022)	124

TABLE 68

Effect of Curriculum Structure on Percent of Time Unemployed (continued)

	Academic Credits	Vocational Credits	Cooperative Status	Cooperative Credits	Number of Observations
Persons with California Mental Maturity IQ Less than 100	-.001 (.009)	-.010 (.011)	.018 (.132)	-.008 (.021)	177
Persons Who have had No Post High School Education	-.006 (.006)	-.010 (.009)	-.011 (.098)	.007 (.015)	357
Persons Who have Completed some Non-college Post High School Education	-.007 (.007)	-.003 (.009)	-.007 (.087)	-.006 (.016)	126

Notes: The statistics are the partial regression coefficient and its standard error in parenthesis.

* = significant at the .05 level.

** = significant at the .01 level.

in question. Likewise, enrollment in the cooperative program, given that the effect of one's academic and vocational credits is accounted for in the model, does not have an effect on the level of unemployment for any sample subgroup. We note, however, that for the Total Sample, a one credit increase in vocational credits reduces the unemployment rate by 1.2 percent ($.012 \cdot 100 = 1.2$). This effect is due mainly to white females in the study sample. Finally, we note that when we separate our sample into the three groups which describe the nature of their post-secondary education experience, curriculum structure has no impact on the percent of time unemployed.

In summary, we note only a few instances where curriculum structure can be said to have an effect on reducing one's unemployment rate.

F. Empirical Effects: Wage Rates and Earnings

This section analyzes the results of Models E, F, G and H which treat of average hourly wage rates and average monthly earnings on the first and last jobs held since leaving high school.

Average Hourly Wage Rates: Model E. Tables 69, 70 and Appendix Table E-24 display the impact of the cooperative program on average hourly earnings for the first job lasting one month or longer since leaving high school. If the cooperative vocational program has an advantage, it should have one at this point where the relatively extensive on-the-job training of the cooperative students can make its impact in the labor market. At this point, academic, general and vocational students should have little on-the-job training. Likewise, if these three groups of students don't go on to college, then, with their more general skill preparation, they are more likely to shift about, sampling jobs and acquiring on-the-job training. Finally, it is also true that some of the students in all these curricula will be attending some type of post-secondary education. While we attempt to control for this behavior in our models, we cannot do so completely. Thus, some of the apparent advantage the cooperative student may have in hourly earnings can be due to the fact that some non-cooperative students who are obtaining some type of post-secondary education have access only to relatively low wage, part-time jobs. This apparent benefit in favor of the cooperative student should diminish over time. The analysis of the average hourly wage rate on the last job should give us some insight into this possibility. With these thoughts in mind, we continue with the analysis.

Cooperative students earn 36 cents, 39 cents and 21 cents an hour more on the average than academic, general and vocational students, respectively. (Appendix Table E-24.) As Table 69 shows, the average hourly wage rate of the cooperative student in the Total Sample is $2.18. It is $1.82, $1.78 and $1.97 for the academic, general and vocational curriculum, respectively. For the academic curriculum, this difference

TABLE 69

IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, AVERAGE HOURLY WAGE RATE ON FIRST JOB SINCE LEAVING HIGH SCHOOL

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
Total Sample	.25	-.11	-.15	.04	-.51	1.93
Males	.35	-.14	-.12	.02	-.85	2.18
Females	.14	-.09	-.15	.06	.05	1.73
White Males	.32	-.13	-.12	.02	-.95	2.16
White Females	.12	-.01	-.22	.03	-.44	1.79
Black Males	1.01	-.46	-.18	.10	-.38	2.34
Black Females	.02	-.35	.10	.13	1.59	1.52
1966 Cohort Males	.54	-.34	-.09	.10	-1.07	2.43
1970 Cohort Males	.37	.08	-.34	-.13	-.61	1.94
1966 Cohort Females	.19	-.00	-.2	-.09	.18	2.00
1970 Cohort Females	.09	-.18	-.04	.20	-.27	1.55
1966 Cohort White	.32	-.12	-.31	-.02	-.83	2.20
1970 Cohort White	.18	-.05	-.14	.03	-.80	1.74
1966 Cohort Black	.79	-.49	.40	-.07	1.82	2.18
1970 Cohort Black	.57	-.23	-.23	.11	-.08	1.57

TABLE 69

Impact of High School Curricula Expressed as Deviations from the Grand Mean of the Study Sample, Average Hourly Wage Rate on First Job since Leaving High School (continued)

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
All Cooperative Samples plus Non-cooperative Vocational Education Samples	.09	---	---	-.10	---	2.17
College Graduates	.17	-.03	-.42	.08	.70	1.86
California Mental Maturity IQ Less than loo	.33	-.26	-.11	-.03	-.46	1.94
Those Who have had no Post High School Education	.20	.14	-.25	.04	-.72	1.95
Persons Who have Completed Some Non-college Post High School Education	.33	-.74	-.24	.26	---	2.23

is due mainly to the experience of males, specifically, 1966 Cohort Males. But for the general curriculum, this difference is due to the fact that both male and female cooperative students earn more than male and female general curriculum students. Finally, the advantage of the cooperative curriculum over the vocational curriculum is also due to the differentially favorable experience of cooperative males who earn 33 cents an hour more than vocational males ($2.53 - $2.20).

We should note that black cooperative males earn very high average hourly wages--$3.35 compared to $2.48 for white cooperative males. Unfortunatley, these differences between the curricula for both black males and females are not statistically significant at conventional levels. (Appendix Table E-24.)

Effect of Curriculum Structure. Table 70 outlines the effect of curriculum structure on the average hourly wage rate of the first job. For the Total Sample we see that as vocational credits earned increase by one credit, we can expect the wage rate to increase by eight cents per hour. However, academic credits and cooperative vocational credits have no effect on the average hourly wage rate. Thus, the impact of cooperative vocational credits is the same as the impact of vocational credits earned in the non-cooperative high schools. Enrollment in the cooperative program raises the average level of one's hourly wage rate on the first job by 46 cents per hour. If it is not population differences which account for this differential effect, we should ask ourselves just what mechanism may be operating here. Since we are talking about an influence on the average level and not a characteristic which changes the level as the characteristic changes, we must look to qualitative differences in the cooperative curriculum which may account for the difference. As described earlier a number of factors come to mind. For instance, cooperative students may receive more or better counseling. Membership in the program may create an esprit among the students which translates into higher levels of self confidence, discipline or other psychological characteristics rewarded in the labor market. Also, cooperatives may find jobs in essentially different occupational labor markets or may have access to better information on the labor market. Any or all of these factors could account for the difference. Furthermore, since almost all males work and in the prime ages usually have high employment rates, we would expect such effects to show up more in wage rates than in employment.

Returning to Table 70, we see that it is the differential performance of males, both 1966 and 1970 Cohort Males, which accounts for the influence of vocational credits. On the other hand, it is the differential performance of 1966 Cohort Whites which accounts for the effect of the cooperative status variable in the Total Sample.

TABLE 70

ANALYSIS OF CURRICULUM STRUCTURE, AVERAGE HOURLY WAGE RATE, FIRST JOB AFTER LEAVING HIGH SCHOOL

	Academic Credits	Voca-tional Credits	Cooper-ative Credits	Cooper-ative Status	Number of Obser-vations
Total Sample	0.02 (0.01)	0.08** (0.02)	-0.06 (0.03)	0.46* (0.21)	911
Males	0.02 (0.02)	0.13** (0.03)	-0.03 (0.07)	0.41 (0.39)	397
Females	0.01 (0.02)	-0.03 (0.04)	0.32** (0.04)	0.28 (0.24)	514
White Males	0.02 (0.02)	0.13** (0.04)	-0.04 (0.07)	0.45 (0.40)	348
White Females	0.04* (0.02)	0.06* (0.03)	-0.05 (0.04)	0.30 (0.25)	409
Black Males	-0.03 (0.09	0.16 (0.10)	0.11 (0.33)	-0.29 (2.26)	49
Black Females	-0.06 (0.04)	-0.05 (0.06)	-0.02 (0.15)	0.33 (1.08)	105
1966 Cohort Males	0.04 (0.03)	0.10* (0.05)	-0.01 (0.10)	0.50 (0.50)	196
1970 Cohort Males	0.06* (0.03)	0.16** (0.05)	-0.04 (0.10)	0.45 (0.66)	211
1966 Cohort Females	0.00 (0.03)	-0.00 (0.04)	-0.05 (0.06)	0.61 (0.31)	212
1970 Cohort Females	0.00 (0.02)	0.05 (0.04)	0.03 (0.06)	-0.45 (0.44)	302
1966 Cohort White	0.05* (0.02)	0.07* (0.03)	-0.07 (0.05)	0.67* (0.27)	353

TABLE 70

Analysis of Curriculum Structure, Average Hourly Wage Rate, First Job After Leaving High School (continued)

	Academic Credits	Vocational Credits	Cooperative Credits	Cooperative Status	Number of Observations
1970 Cohort White	0.04 (0.02)	0.13** (0.03)	-0.05 (0.06)	0.09 (0.38)	404
1966 Cohort Black	-0.09 (0.05)	-0.07 (0.08)	-0.24 (0.20)	2.13 (1.12)	55
1970 Cohort Black	-0.01 (0.05)	-0.04 (0.06)	0.12 (0.24)	-0.62 (1.77)	99
All Cooperative Samples plus Noncooperative Vocational Education	0.04* (0.02)	0.03 (0.05)	-.00 (0.06)	.19 (0.32)	453
College Graduates	-0.03 (0.04)	-0.04 (0.07)	0.08 (0.17)	-0.10 (0.75)	110
Persons with California Mental Maturity IQ Less than 100	0.04 (0.03)	0.02 (0.04)	0.06 (0.08)	-0.00 (0.49)	161
Those Who have had No Post High School Education	0.04 (0.02)	0.07* (0.03)	-0.00 (0.05)	0.01 (0.37)	336
Persons Who have Completed Some Post High School Education	-0.02 (0.05)	0.18* (0.07)	-0.23* (0.12)	1.20 (0.65)	107

Notes: The statistics are the partial regression coefficient and its standard error in parenthesis.

* = significant at the .05 level.

** = significant at the .01 level.

With respect to other findings, we should note that cooperative vocational credits have no differential effects vis-a-vis other vocational credits on the average hourly wage rate once one accounts for other aspects of the curriculum structure. This is true for all sample subgroups except persons who have completed some post-high school education, where the effect of cooperative credits is negative relative to non-cooperative vocational credits.

Finally, we should note that curriculum structure has no effect on the wage rate for Black Males and Black Females or for the 1966 or 1970 Cohort Black. Unfortunately small sample sizes here confuse the picture. One final factor to note is that only academic credits have a positive influence on wage rates for All Cooperative Samples Plus Non-cooperative Vocational Education. This also suggests that academic credits earned is the main distinguishing characteristic among this sample subgroup. It could possibly be a proxy for IQ, ambition or whatever, though freshman grade point average is included in these models.

Model F: Wage Rate on Last Job. The analysis in Tables 71, 72 and Appendix Table E-28 allow us to see how the patterns of curriculum effect may change over time.

We should note first that the grand mean of the Total Sample and the various subgroups has increased considerably. Thus, on the first job the average hourly wage rate of the Total Sample was $1.93 while it is $2.33 for the last job. Average hourly wage rates for other subgroups have increased similarly. That of 1966 Cohort males has risen from $2.43 to $3.34 while that of 1966 Cohort Black has risen from $2.18 to $3.15 and College Graduates has risen from $1.86 to $3.17.[1]

Next, the average difference in favor of the cooperative curriculum has fallen relative to the other curricula. In comparison with the academic curriculum, the drop is from 36 cents on the first job to 28 cents on the last job. Of course, the relative difference is even smaller. No significant difference exists between the cooperative and vocational curriculum, while the differential vis-a-vis the general curriculum has risen from 39 to 41 cents. As the insert shows, the absolute increase in

Total Sample

Average Hourly Wage Rate:	Cooperative	Academic	General	Vocational
First Job	2.18	1.82	1.78	1.97
Last Job	2.53	2.25	2.12	2.42
Absolute Increase	.35	.43	.34	.45
Percent Increase	16.1	23.6	19.1	22.8

TABLE 71

IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, AVERAGE HOURLY WAGE RATE ON LAST JOB SINCE LEAVING HIGH SCHOOL

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
Total Sample	.20	-.08	-.21	.09	-.58	2.33
Males	.24	-.21	-.20	.24	-.71	2.66
Females	.15	.03	-.21	-.02	-.20	2.07
White Males	.23	-.22	-.19	.27	-.78	2.65
White Females	.17	-.02	-.28	.03	-.37	2.11
Black Males	.75	-.27	-.40	.26	-.51	2.72
Black Females	-.14	.04	.07	-.05	-.29	1.89
1966 Cohort Males	.10	-.30	.03	.33	-.74	3.34
1970 Cohort Males	.45	-.03	-.56	.06	-.67	2.00
1966 Cohort Females	.20	.24	-.60	-.18	-.47	2.69
1970 Cohort Females	.09	-.21	.02	.16	.13	1.63
1966 Cohort White	.19	-.08	-.38	.13	-.77	2.98
1970 Cohort White	.24	-.11	-.23	.12	-.67	1.82
1966 Cohort Black	-.58	.51	-.01	-.52	.53	3.15
1970 Cohort Black	.50	-.25	-.22	.15	-.16	1.61

TABLE 71

Impact of High School Curricula Expressed as Deviations from the Grand Mean of the Study Sample, Average Hourly Wage Rate on Last Job since Leaving High School (continued)

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
All Cooperative Samples plus Non-cooperative Vocational Education Samples	.07	---	---	-.08	---	2.54
College Graduates	.22	-.01	.36	-.29	-.31	3.17
California Mental Maturity IQ Less than 100	.21	-.13	-.14	.04	-.26	2.33
Those Who have had No Post High School Education	.24	.03	-.32	.08	-.66	2.18
Persons Who have Completed Some Non-college Post High School Education	.14	-.41	-.23	.29	---	2.83

average hourly wage rate is almost the same for the cooperative and general curricula but considerably higher for the academic and vocational curricula. Indeed, cooperative students register the smallest relative wage increase. Likewise, the relative advantage of the cooperative curriculum vis-a-vis the academic curriculum declines from 16.5 percent to 11.1 percent when one compares first and last job. For the general curriculum this decline is from 18.3 percent to 16.2 percent while for the vocational curriculum it is from 9.6 to 4.3 percent. And, in fact, this latter difference is not statistically significant.

We find that for the last job, there is no statistically significant difference in the average hourly wage rate when one compares the cooperative and the vocational curriculum. Cooperative vocational education retains its advantage over the academic and general curricula. In the former case, this is due to the differential experience of white males as was the case for the wage rate on the first job. In the latter case, this is due to the differential experience of both male and female cooperative students as was the case for the wage rate on the first job.

We should note what has so often been the case in this study, namely that there is no difference among the curricula for either College Graduates or for persons with California Mental Maturity IQ Less than 100. Factors other than high school curriculum influence relative wage rates of these groups. Nor do the various black subgroups gain any substantial benefit from selecting one curriculum over another.

Effect of Curriculum Structure. The effect of curriculum structure on average hourly wage rate of one's last job is detailed in Table 72. Here we see patterns of effect which are similar to those on the wage rate of the first job. Cooperative credits have no impact independent of vocational credits in general regardless of the sample subgroup inspected. Cooperative status likewise has no effect for any sample subgroup. Vocational credits, however, operate in substantially the same way. A one credit increase increases the average hourly wage rate by nine cents. This effect again is due mainly to White Males as well as both 1966 and 1970 Cohort Males.

Now the impact of vocational credits is to increase the hourly wage rate 14 cents for each credit earned for persons who have completed some post-high school education. Cooperative credits now have no effect independent of vocational credits in general for this sample subgroup. College graduates and low IQ persons experience no effect of curriculum structure on their average hourly wage rate.

Effects on the Sample with Labor Force Participation Equal to or Greater than 55 Percent. It is of some interest to determine the effect of curriculum on those who have a relatively strong attachment to the labor force. Appendix Tables E-59, E-60, E-61 and E-62 display the analytical results

TABLE 72

ANALYSIS OF CURRICULUM STRUCTURE, AVERAGE HOURLY WAGE RATE, LAST JOB AFTER LEAVING HIGH SCHOOL

	Academic Credits	Vocational Credits	Cooperative Credits	Cooperative Status	Number of Observations
Total Sample	0.02 (0.02)	0.09** (0.02)	-0.04 (0.04)	0.21 (0.23)	911
Males	0.01 (0.02)	0.17** (0.04)	-0.02 (0.07)	-0.00 (0.43)	397
Females	0.04* (0.02)	0.02 (0.03)	0.02 (0.04)	0.04 (0.26)	514
White Males	0.02 (0.02)	0.18** (0.04)	-0.04 (0.07)	0.08 (0.42)	348
White Females	0.05* (0.02)	0.06 (0.03)	-0.04 (0.05)	0.28 (0.27)	409
Black Males	-0.04 (0.08)	0.18* (0.09)	0.30 (0.30)	-2.22 (2.08)	49
Black Females	0.03 (0.04)	-0.08 (0.06)	0.21 (0.16)	-1.24 (1.15)	105
1966 Cohort Males	0.01 (0.04)	0.12* (0.05)	-0.06 (0.11)	0.14 (0.58)	196
1970 Cohort Males	0.06 (0.04)	0.20** (0.05)	-0.05 (0.11)	0.40 (0.71)	211
1966 Cohort Females	0.05 (0.03)	0.00 (0.05)	-0.03 (0.07)	0.49 (0.36)	212
1970 Cohort Females	0.00 (0.03)	0.05 (0.04)	0.04 (0.07)	-0.49 (0.47)	302
1966 Cohort White	0.04 (0.03)	0.08* (0.04)	-0.09 (0.06)	0.53 (0.32)	353

TABLE 72

Analysis of Curriculum Structure, Average Hourly Wage Rate, Last Job After Leaving High School (continued)

	Academic Credits	Vocational Credits	Cooperative Credits	Cooperative Status	Number of Observations
1970 Cohort White	0.04 (0.02)	0.15** (0.04)	-0.07 (0.06)	0.23 (0.41)	404
1966 Cohort Black	0.08 (0.05)	-0.14 (0.09)	-0.01 (0.23)	-0.12 (1.27)	55
1970 Cohort Black	The equation could not be estimated due to collinearity among the variables				
All Cooperative Samples plus Noncooperative Vocational Education	0.02 (0.03)	0.03 (0.05)	0.00 (0.06)	0.05 (0.34)	453
College Graduates	0.04 (0.06)	-0.03 (0.11)	0.10 (0.27)	-0.08 (1.18)	110
Persons with California Mental Maturity IQ Less than 100	0.03 (0.04)	0.03 (0.05)	0.07 (0.08)	-0.30 (0.54)	161
Those Who have had No Post High School Education	0.04 (0.02)	0.10** (0.04)	-0.01 (0.06)	0.01 (0.40)	336
Persons Who have Completed Some Post High School Education	0.04 (0.05)	0.14* (0.07)	-0.10 (0.11)	0.26 (0.64)	107

Notes: The statistics are the partial regression coefficient and its standard error in parenthesis.

* = significant at the .05 level.

** = significant at the .01 level.

for this group. In general, we note that the average hourly wage rates for the sample subgroups in this analysis are substantially lower for both the first and last jobs compared to the study sample as a whole. The wage rates on the first job are usually less than $1.50 per hour, while on the last job they are usually less than $1.75 per hour. (Table E-59). Next, there are very large differences in average hourly wage rates between cooperative and academic curriculum students--about 50 cents per hour in favor of cooperative students on the first job and about 29 cents on the last job. In terms of curriculum structure, cooperative credits have large effects for the Total Sample. A one credit increase increases the average hourly wage rate on the first job by $1.51 and on the last job by $1.45. However, cooperative status reduces the average level of the wage rate on the first job by 22 cents and by 21 cents on the last job. These effects, not too surprisingly, are due to the differential effects of Females in the samples. Finally, as before, blacks gain no specific benefits from the curriculum structure, though again, small sample sizes obscure this effect.

Curriculum Effects on Average Monthly Earnings: Models G and H. The impact of the cooperative curriculum on average monthly earnings represents our final area of labor market analysis. Earnings are not quite as ideal an index of welfare as wage rates since unlike wage rate increases, earnings increases may result in decreases in benefits due to lost leisure or non-market work. However, earnings do represent another dimension of one's economic welfare and bear scrutiny for this reason.

Average Monthly Earnings: First Job. Tables 73, 74 and Appendix Table E-31 detail the results for Model H which analyzes the impact of the cooperative curriculum on average monthly earnings on the first job lasting one month or longer since leaving high school. As one might expect from the analysis of curriculum effects on the average hourly wage rate, the impact of the cooperative curriculum on earnings is positive and large. On the first job for the Total Sample cooperative students earn $352 per month while academic students earn only $292 and general students just $271 while vocational students earn $311 per month (Table 73). As Appendix Table E-31 shows, for the Total Sample cooperative students earn $60 more per month than academic students and $82 and $42 more, respectively, than the general and vocational curriculum students. Moving ahead a bit, we should note the important fact that these differentials persist on the last job vis-a-vis academic students ($57) and general students ($85) but become zero with respect to vocational students.

With respect to the differences between cooperative and academic or general students, we can trace the impact to both Males and Females. But with respect to the vocational curriculum, the difference for the first job earnings is mainly traceable to the differential performance of Males, largely White Males.

TABLE 73

IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, AVERAGE MONTHLY EARNINGS OF FIRST JOB SINCE LEAVING HIGH SCHOOL

	Coop-erative	Academic	General	Vocational	Unde-termined	Grand Mean
Total Sample	46	-14	-35	5	-107	306
Males	62	-3	-36	-11	-204	365
Females	35	-28	-31	19	25	261
White Males	55	0	-41	-11	-219	360
White Females	29	-16	-47	20	-67	269
Black Males	207	-104	-17	14	-119	396
Black Females	31	-68	24	12	314	228
1966 Cohort Males	97	-34	-34	1	-236	416
1970 Cohort Males	64	32	-72	-33	-162	315
1966 Cohort Females	30	-2	-49	-7	-15	316
1970 Cohort Females	39	-47	-16	39	-49	221
1966 Cohort White	55	-8	-68	-8	-166	365
1970 Cohort White	34	-2	-42	10	-158	263
1966 Cohort Black	142	-92	71	-11	360	358
1970 Cohort Black	124	-47	-28	7	-59	241

TABLE 73

Impact of High School Curricula Expressed as Deviations from the Grand Mean of the Study Sample, Average Monthly Earnings of First Job Since Leaving High School (continued)

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
All Cooperative Samples plus Non-cooperative Vocational Education Samples	22	---	---	-23	---	355
College Graduates	-12	8	-40	-40	163	277
California Mental Maturity IQ Less than 100	75	-36	-26	-11	-113	311
Those Who have had No Post High School Education	43	40	-57	8	-149	326
Persons who have Completed Some Non-college Post High School Education	64	-141	-45	48	---	357

Black Females gain no advantage due to pursuit of the different curricula, not do 1966 Cohort Females, 1970 Cohort Blacks or College Graduates. However, Black Males in the cooperative program earn $311 more per month on the average than black academic males. This may be due to the fact that black academic males are working part-time or at low quality jobs while they pursue additional education. However, an equally likely possibility is that non-random non-response bias is responsible for thi large difference.

Effect of Curriculum Structure. As shown in Table 74 we see that for the Total Sample cooperative vocational credits have no statistically significant effect on average monthly earnings independent of vocational credits. As one's vocational credits increase by one credit, though, average monthly earnings rise by $13. Academic credits earned have no effect on average monthly earnings on the first job after high school but enrollment in the cooperative program results in an increase in the average monthly wage rate of $82. This latter effect is due to the 1966 Cohort White subgroup. The positive effect of vocational credits is due to both white Males and White Females. Curriculum structure has no effect at all for Black Males, 1970 Cohort Black, 1966 or 1970 Cohort Females, College Graduates or persons with low IQ's in this study sample.

Effect of Curriculum on Average Monthly Earnings, Last Job, Model H. Again, since the effects of the cooperatige curriculum may be transitory, it is instructive to see the effects of the curriculum on the average monthly wage rate of the last job held since leaving high school. While a relatively short period of time has elapsed for the 1970 Cohort, more than five years elapsed between the time when the 1966 Cohort left high school and when it was interviewed. Although many of the students will still be investing in themselves and will be on the steeply rising sections of their time-income profile, there will be somewhat less distortion to confuse the result due to this phenomenon. It should be stressed, however, that the most appropriate comparison is one which analyzes the program impact on the present value of one's lifetime earnings.

Tables 75, 76 and Appendix Table E-35 display the estimated results. First, when one compares the grand means, we see that the average monthly earnings of each sample subgroup has risen considerably when one compares the first and last job earnings. That of the Total Sample, for instance, has risen from $306 per month to $372. 1966 Cohort Males experience a rise from $416 to $577 while 1966 Cohort Cohort Blacks rise from $358 to $536.

As we noted above, the net advantage of the cooperative curriculum over the academic and general curriculum was similar when one compared average monthly earnings on the first and last job. But, there is no longer any difference between the cooperative and the vocational curriculum. This

TABLE 74
ANALYSIS OF CURRICULUM STRUCTURE, AVERAGE MONTHLY EARNINGS, FIRST JOB AFTER LEAVING HIGH SCHOOL

	Academic Credits	Vocational Credits	Cooperative Credits	Cooperative Status	Number of Observations
Total Sample	2 (3)	13** (4)	-10 (6)	82* 38	911
Males	6 (4)	19** (6)	-8 (12)	97 (73)	397
Females	-1 (3)	8 (5)	-7 (7)	55 (45)	514
White Males	7 (4)	20** (7)	-10 (13)	107 (74)	348
White Females	5 (4)	15* (6)	-11 (8)	55 (47)	409
Black Males	-7 (16)	26 (17)	29 (58)	-78 (397)	49
Black Females	-15* (7)	-11 (11)	-4 (27)	104 (191)	105
1966 Cohort Males	8 (6)	17 (9)	-1 (18)	97 (92)	196
1970 Cohort Males	15* (6)	22* (9)	-11 (19)	116 (121)	201
1966 Cohort Females	1 (5)	3 (9)	-13 (11)	107 (60)	212
1970 Cohort Females	-6 (4)	11 (7)	6 (11)	-72 (78)	302
1966 Cohort White	9* (4)	12 (6)	-13 (10)	121* (51)	353

TABLE 74

Analysis of Curriculum Structure, Average Monthly Earnings, First Job After Leaving High School (continued)

	Academic Credits	Vocational Credits	Cooperative Credits	Cooperative Status	Number of Observations
1970 Cohort Whites	5 (4)	22** (6)	-8 (10)	17 (69)	404
1966 Cohort Black	-17* (9)	-13 (15)	-49 (38)	410 (210)	55
1970 Cohort Black	-7 (9)	4 (10)	23 (42)	-85 (311)	99
All Cooperative Samples plus Noncooperative Vocational Education	5 (5)	16* (9)	-9 (11)	71 (61)	453
College Graduates	-4 (8)	-5 (15)	6 (36)	-24 (158)	110
Persons with California Mental Maturity IQ Less than 100	5 (6)	4 (8)	14 (15)	-7 (95)	161
Those Who have had No Post High School Education	8 (4)	15* (6)	-1 (10)	0 (68)	336
Persons Who have Completed Some Post High School Education	-5 (9)	25 (13)	-51* (22)	288* (119)	107

Notes: The statistics are the partial regression coefficient and its standard error in parenthesis.

* = significant at the .05 level.

** = significant at the .01 level.

occurs because the advantage which white male cooperatives, 1966 Male cooperatives and 1966 Cohort White cooperatives had has disappeared vis-a-vis their vocational counterparts. (See Appendix Table E-35). However, 1966 Cohort Females in the cooperative program now earn $169 a month more than general curriculum females and $70 a month more than vocational females. In contrast, for this sample subgroup there was no difference in average monthly earnings on the first job after high school. This argues for a stronger committment of cooperative females to the labor force.

There is no longer any gain of the 1966 Cohort Black cooperative subgroup over its academic counterpart. We also find that the advantage of low IQ cooperative students over their counterparts in the general curriculum has disappeared, while there continues to be no differential curriculum impact for college graduates.

In general, there is no clearly discernable pattern of changes among the various subgroups when one compares curricula. The following insert compares the curricula for the Total Sample for the first and last jobs. We see that cooperative students earn the most on their last job. First job earnings of cooperative students are almost equal to last job earnings of academic students. Only vocational students begin to approach the earnings level of cooperative students. While cooperative, academic and general students display similar absolute increases in their average monthly earnings vocational students experience an increase of $80. One is tempted to suggest that the absolute differences between the cooperative, academic and general curricula are likely to stay constant over time while that between the cooperative and vocational curriculum may narrow. This latter conclusion is borne out by the fact that there is no statistically significant difference between cooperative and vocational students for either the first or last job monthly earnings when these two curricula are analyzed as a separate sample subgroup. Of course, the relative differentials will tend to decrease among these curricula. Indeed, the cooperative advantage over the academic curriculum decreases from 17 to 14 percent. It drops from 23.0 to 20.8 percent for the general curriculum and from 11.6 to 5.6 percent for the vocational curriculum. This last difference is not even statistically significant.

Total Sample

Average Monthly Earnings:	Cooperative	Academic	General	Vocational
First Job	352	292	271	311
Last Job	414	357	328	391
Absolute Increase	62	65	57	80
Percent Increase	17.6	22.3	21.0	25.7

TABLE 75
IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, AVERAGE MONTHLY EARNINGS OF LAST JOB SINCE LEAVING HIGH SCHOOL

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
Total Sample	42	-15	-44	19	-129	372
Males	39	-32	-31	41	-186	449
Females	43	-7	-51	4	-28	313
White Males	36	-32	-28	44	-197	446
White Females	45	-24	-68	23	-48	315
Black Males	137	-72	-65	55	-170	469
Black Females	-6	9	16	-17	-113	304
1966 Cohort Males	36	-59	12	51	-198	577
1970 Cohort Males	63	4	-99	18	-174	326
1966 Cohort Females	49	25	-119	-20	-90	427
1970 Cohort Females	37	-48	-12	35	23	233
1966 Cohort White	51	-28	-70	24	-168	493
1970 Cohort White	41	-19	-53	37	-128	273
1966 Cohort Black	-107	72	4	-72	31	536
1970 Cohort Black	100	-39	-37	20	-122	258

TABLE 75

Impact of High School Curricula Expressed as Deviations from the Grand Mean of the Study Sample, Average Monthly Earnings of Last Job Since Leaving High School (continued)

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
All Cooperative Samples plus Non-cooperative Vocational Education Samples	16	---	---	-17	---	426
College Graduates	79	-16	90	0	-237	482
California Mental Maturity IQ Less than 100	41	-29	-38	17	-28	387
Those Who have had No Post High School Education	41	22	-71	21	-103	366
Persons Who have Completed some Non-college Post High School Education	64	-108	-58	43	64	477

Effect of Curriculum Structure. The reasons for the improvement of the vocational curriculum become clearer when one contrasts the results on Table 76 with those for the average monthly earnings for the first job shown on Table 74. The $82 per month advantage that a cooperative student had (independent of the cooperative vocational credits he earned) has disappeared for the last job. Cooperative vocational and academic credits per se tender him no net advantage in the labor market. However, the impact on earnings of vocational credits increases by about 46 percent between the earnings of the two jobs. One additional vocational credit raises one's monthly earnings from $13 on the first job to $19 on the last job. Again, this is due to the differential experience of Males (a change from $19 to $33) and White Males and Females. Furthermore, the impact is significant and large for both the 1966 and 1970 Cohort Males. Even Black Males show an increase from $26 (not statistically significant) to $33 (significant at the 5 percent level).

In summary, as one might expect, the advantages a cooperative student has by virtue of his enrollment in the program, such as better labor market information or access to specific jobs or industries due to the efforts of one's teachers or counselors disappears over time. Over time it does not matter whether one's vocational credits are earned in the cooperative program or in the comprehensive high schools, so long as one earns them. We should also note that the initial advantage of the cooperative status does not appear to be due exclusively to the cooperative credits. Rather, it is due to characteristics of the program, such as better labor market information, which dissipate over time.

G. Summary and Conclusions

This chapter has analyzed the impact of the cooperative vocational program on selected indices of employment and earnings. Two methodological approaches were employed. First, categorical (dummy) variables were used to estimate differences in the average level of performance among the curricula with respect to the selected labor market indices. Next, we analyze the impact of curriculum structure. We seek to determine if there is a difference in labor market impact between vocational credits earned in the cooperative program and vocational credits earned in noncooperative schools. The generally close correspondence between the results of the two methodological approaches, in view of the fact that the dummy variables for the four curricula have low simple correlations, suggests that while multicollinearity is present in the curriculum structure models, it is not so great as to result in erroneous analytical judgments.

Performance of the Models. Generally the regression models in this chapter explain from ten to 30 percent of the variance in the dependent variable in question. Some models explain none of the variance and a few explain over 50 percent.

TABLE 76

ANALYSIS OF CURRICULUM STRUCTURE, AVERAGE MONTHLY EARNINGS, LAST JOB AFTER LEAVING HIGH SCHOOL

	Academic Credits	Vocational Credits	Cooperative Credits	Cooperative Status	Number of Observations
Total Sample	4	19**	-12	67	911
	(3)	(4)	(7)	(40)	
Males	4	33**	-18	75	397
	(4)	(6)	(12)	(73)	
Females	4	8	-4	51	514
	(3)	(5)	(8)	(48)	
White Males	5	35**	-21	94	348
	(4)	(7)	(13)	(75)	
White Females	6	16**	-15	100	409
	(4)	(6)	(8)	(49)	
Black Males	-10	33*	43	-334	49
	(14)	(15)	(51)	(347)	
Black Females	2	-11	33	-184	105
	(7)	(12)	(30)	(211)	
1966 Cohort Males	2	28**	-21	86	196
	(6)	(9)	(19)	(98)	
1970 Cohort Males	14*	35**	-21	132	201
	(6)	(8)	(18)	(18)	
1966 Cohort Females	14**	11	-11	106	212
	(5)	(9)	(11)	(62)	
1970 Cohort Females	-7	12	4	-66	302
	(5)	(7)	(12)	(82)	
1966 Cohort White	11*	23**	-23*	136*	353
	(4)	(7)	(10)	(54)	

TABLE 76

Analysis of Curriculum Structure, Average Monthly Earnings, Last Job After Leaving High School (continued)

	Academic Credits	Voca-tional Credits	Cooper-ative Credits	Cooper-ative Status	Number of Obser-vations
1970 Cohort White	4 (4)	28** (6)	-16 (11)	53 (70)	404
1966 Cohort Black	12 (9)	-23 (16)	-7 (40)	-15 (222)	55
1970 Cohort Black	-6 (10)	13 (11)	13 (11)	-375 325	99
All Cooperative Samples plus Noncooperative Vocational Education	5 (5)	10 (9)	-5 (11)	44 (62)	453
College Graduates	15 (10)	18 (19)	-23 (44)	155 (196)	110
Persons with California Mental Maturity IQ Less than 100	4 (7)	13 (8)	16 (15)	-95 (96)	161
Those Who have had No Post High School Education	8 (4)	20** (6)	-4 (10)	-3 (69)	336
Persons Who have Completed Some Noncollege Post High School Education	9 (9)	29* (12)	-25 (21)	128 (115)	107

Notes: The statistics are the partial regression coefficient and its standard error in parenthesis.

* = significant at the .05 level.

** = significant at the .01 level.

Except for the variables designed to measure the impact of differential post-secondary education experience, X_9 and X_{10}, the various independent variables in the models generally perform as one would expect. That is, males earn more than females, married males earn more than unmarried males and so on. The problem with the education variables undoubtedly lies in the fact that they are not well specified; that is, these variables do not control for length of time of one's education, quality of degree, or whether one has additional degrees and of what type.

Impact of Policy Variables: Employment. With respect to total months elapsed between leaving school and acquiring one's first job lasting a month or longer (Model A) there are no striking major differences among the curricula and the cooperative program does not have an overwhelming advantage vis-a-vis the other curricula. Likewise, though differences do exist in the time it takes to acquire one's first job as a function of secondary curriculum structure, there aren't any notable differences that hold for a variety of sample subgroups.

Cooperative students do tend to hold their first job after leaving high school for a longer period than the other curricula. This is due mainly to the experience of cooperative males in the study sample. But, in general, the cooperative program is less advantageous for blacks than for whites, though the small sample sizes for blacks must severely qualify this judgment. Again, with respect to the impact of the curriculum structure, it is generally the experience of males which accounts for the statistically significant impact of the cooperative status variable. But academic and vocational credits have no statistically significant impact for the Total Sample, Males and Females. Cooperative vocational credits likewise have no effect independent of vocational credits for these three sample subgroups. For certain sample subgroups such as All Cooperative Samples plus Non-cooperative Vocational Education Samples, curriculum structure has no statistically significant impact at all.

A contrast of the results for months employed on the first and last jobs does not present any surprising differences. The average length of time one holds his last job increases and the relative advantage of the cooperative curriculum vis-a-vis the other three curricula decreases over time. It is most notable that there is no statistically significant difference between cooperative and vocational curriculum students on total months employed on the last job since leaving high school.

The percent of time unemployed is the least ambiguous measure of employment effect among the indices used in this study, though it is not a perfect index of economic welfare. While we find that cooperative students are unemployed less than general and academic curriculum students, we should point out the fact that there is no difference in the unemployment rate of the cooperative and vocational students. We should note that when we confine our analysis to those in the study sample who are in the labor force at least 55 percent of the time, there is no difference in unemployment among the curricula for either the Total Sample, Males, Females, Whites or Blacks and Others. In short, curriculum does not appear to have an impact when labor force participation rates are relatively homogenous among curricula. Also, if cooperative and vocational students most closely resemble each other in terms of population characteristics, then, if we ignore the issue of costs for the moment, there is no necessary benefit to be gained in getting one's vocational education at the cooperative high school rather than in a non-cooperative high school.

With respect to wage rates and earnings on the first and last jobs held since leaving high school we find that the advantages which the cooperative student had on the first job tend to diminish on the last job. In particular, while cooperative status has a positive benefit on the first job, this benefit disappears vis-a-vis the vocational curriculum. In terms of both wage rate and earnings, the relative advantage of the cooperative curriculum diminishes over time. In addition, vocational students gain very large increases in average hourly wage rates and earnings over time. We also find that what advantage the cooperative program has is usually due to the effect of cooperative males in the sample, though in some cases cooperative females also fare well.

Finally, it appears that vocational credits do have an impact on wages and earnings but, in general, academic do not and cooperative vocational credits have the same effect as vocational credits. Thus, it appears that what matters in the labor market is the fact that one takes vocational training, and not necessarily whether one takes this training in the cooperative or the non-cooperative high schools.

As a closing comment we should note that while we have often identified which curriculum or which sample subgroup is responsible for a given positive or negative effect, we still do not have a clear understanding as to the reasons why such a curriculum or group has the effect it has. A true understanding of the cooperative program would require this more complete approach. Also, we should note that this discussion of relative benefits in no way allows us to make efficienty judgments among the curricula since neither life-time costs nor the present value of life-time benefits are considered in this study. Again, it is a cliche to say that further research needs to be done, but unfortunately we just subscribe to this cliche.

CHAPTER 8

COMPARATIVE ANALYSIS OF COOPERATIVE AND NON-COOPERATIVE EMPLOYER EXPERIENCES AND ATTITUDES

A. Introduction

Since the success of any educational venture such as cooperative vocational education requires the cooperation of the business sector, it is crucial to determine the reactions of employers to such a program. To this end, a sample of 100 employers, comprised of 50 who employed cooperative students and fifty other employers ("non-cooperative"), in the Dayton labor market area was chosen. Chapter 1 briefly describes the sampling procedure. Forty-nine cooperative employers responded while only 24 of the non-cooperative employers responded after four telephone contacts. Table 77 describes the structure of the employer sample. As can be seen, a larger proportion of the non-cooperative employers were located in durable and non-durable manufacturing relative to the co-op sample--33.3 versus 22.5 percent. Approximately the same proportion of employers is situated in services while a larger proportion of the cooperative employers is situated in trade.

It is of interest to note that the cooperative employers have been established in Dayton a long time, an average of almost 49 years, in contrast to about 35 years for the non-cooperative employers. Also, the employers in the cooperative program tend to be larger--much larger in terms of salaried workers and almost twice as large in terms of blue collar production workers. Finally, there is a tendency for the cooperative employers to service local and regional markets while the non-cooperative employers have a greater proportion servicing national and international markets.

B. Potential for Program Expansion

One of the issues facing educational decision makers is whether the program can be effectively expanded should a decision be made to increase state and federal support. This depends in large part on the personnel needs of firms and their technical production aspects but more fundamentally on the demand for a firm's products. Since the demand for labor is a derived demand dependent on demand for a firm's products, it will not be meaningful to attempt to install a cooperative vocational education program in a slack market. We have considerable experience with the JOBS program to understand such dangers. However, Table 79 shows that the impact of the recent down turn has had a minimal effect on the program given that it is already on-going. Also, it is likely that many employers, as well as society at large, will have to get used to the idea of large numbers of 16-and 17-year-olds working in their establishments.

TABLE 77
CHARACTERISTICS OF COOPERATIVE AND NON-COOPERATIVE FIRMS IN DAYTON, OHIO

		Cooperative Employers		Non-cooperative Employers	
		n	%	n	%
Type of Industry					
Agriculture		--	--	--	--
Mining		--	--	--	--
Transportation		--	--	1	4.2
Manufacturing - Durable		9	18.4	5	20.8
Manufacturing - Non-Durable		2	4.1	3	12.5
Government (excluding Education)		1	2.0	--	--
Education		2	4.1	--	--
Forestry		--	--	--	--
Construction		1	2.0	1	4.2
Communication		1	2.0	--	--
Public Utilities		1	2.0	--	--
Trade: Wholesale and Retail		12	24.5	5	20.8
Services		17	34.7	7	29.2
Finance, Real Estate, Insurance		3	6.1	1	4.2
Not Ascertained		--	--	1	4.2
Total		49	99.9	24	100.1
Market Area 1/					
Local		27	55.1	13	54.2
Regional		6	12.2	2	8.3
National		7	14.3	6	25.0
International		8	16.3	3	12.5
Not Ascertained		1	2.0	0	.0
Years Established in Dayton 1/	m	48.9		34.8	
	sd	(36.0)		(27.0)	
Number of Salaried Workers 1/	m	590		69	
	sd	(1385)		(142)	
Number of Production Workers 1/	m	565		365	
	sd	(1575)		(1143)	

Notes: 1/ m = the cell mean; sd = the standard deviation of the cell mean.

TABLE 78
LABOR FORCE AND POTENTIAL EMPLOYMENT OF COOPERATIVE AND NON-COOPERATIVE EMPLOYERS, SPRING, 1972

		Cooperative Employers		Non-Cooperative Employers	
		n	%	n	%
Expected Increase in Salaried Workers					
Increase		13	28.3	9	31.0
Decrease		4	8.7	1	3.4
Stay the same		27	58.7	19	65.5
Not Ascertained		2	4.3	--	---
Expected Increase in Production Workers					
Increase		15	32.6	8	27.6
Decrease		4	8.7	1	3.4
Stay the same		16	34.8	18	62.1
Not Ascertained		5	10.9	2	6.9
Not Currently in Program		6	13.0	--	---
Number of 16- and 17-Year Old Employees	m	25.2		.5	
	sd	(78.8)		(1.4)	
Number of 18-, 19-, 20- and 21-Year-Old Employees	m	48.0		24.5	
	sd	(114.2)		(81.0)	
Number of Cooperative Students Currently Employed	m	9.8		---	
	sd	(14.7)			
Expected Change in Number of 16- and 17-Year-Old Employees: 1971					
Increase		11	22.4	--	---
Decrease		7	14.3	--	---
Stay the same		29	59.2	18	75.0
Not Ascertained		2	4.1	6	25.0
Expected Change in Number of Employees Aged 18-21: 1971					
Increase		10	20.4	7	29.2
Decrease		1	2.0	1	4.2

TABLE 78

Labor Force and Potential Employment of Cooperative and Non-cooperative Employers, Spring, 1972 (continued)

	Cooperative Employers		Non-cooperative Employers	
	n	%	n	%
Stay the same	31	63.3	16	66.7
Not Ascertained	7	12.2	--	---
Expected Change in Number of Employees 16-17 in Next 5 Years				
Increase	15	30.6	1	4.2
Decrease	5	10.2	--	---
Stay the same	28	57.1	20	83.3
Not Ascertained	1	2.0	3	12.5
Expected Change in Number of Employees 18-21 in Next 5 Years				
Increase	24	49.0	7	29.2
Decrease	2	4.1	1	4.2
Stay the same	19	38.8	14	58.3
Not Ascertained	4	8.2	2	8.3

Notes: m = the sample mean; sd = the standard deviation of the mean.

As can be seen from Table 78, the non-cooperative employers do not make a common practice of hiring 16- and 17-year-olds, for they average less than one such person per firm. In contrast, the cooperative employers average 25 such personnel per establishment and, since each student works half-time, this implies 12.5 full-time job slots on the average. In addition, the cooperative employers also hire twice as many 18- to 21-year-olds as do the non-cooperative firms.

Expected Demand. In terms of expected demand for workers, 67.4 percent of the cooperative employers indicate that their demand for salaried workers will stay the same or decrease in the near future, while 68.9 percent of the non-cooperative employers gauge their needs thusly. However, with respect to production workers, 65.5 percent of the non-cooperative employers in the Dayton labor market area felt that their needs would stay the same or decline while 43.5 percent of the cooperative employers felt thusly. Unfortunately, the cooperative response is marred by not ascertained responses which comprise 10.9 percent of the sample for this variable.

It appears, then, that at the time of the interviews, spring and early summer, 1972, the demand for labor was not bouyant in the Dayton labor market area, though the cooperative program could clearly be expanded somewhat if the appropriate publicity effort were generated. Over the next five years, about 31 percent of the cooperative employers expect their demand for 16 and 17 year olds to increase, while about 49 percent expect their demand for 18-21 year olds to increase. In contrast, the respective figures for non-cooperative employers is about four percent and 20 percent. (See Table 78.)

We can see from Table 80 that 37.5 percent of the non-cooperative employers give as primary reasons for not hiring cooperative students those reasons which would tend to restrict the expansion of the program--unwillingness to accommodate part-time workers or to hire the very young as well as other legal restrictions. On the other hand, about one third of the employers indicated they were not in the program as yet because they had never been asked; though it is unlikely that all of them would participate if they were asked. Nor is it clear how many students they would hire if they agreed to participate. Finally, there simply aren't sufficient observations to determine the major reasons why some employers chose to quit the cooperative program.

In summary, it appears that the program could be expanded somewhat in the Dayton area even under current conditions for the demand of labor. No hard core resistance to the program appears to exist among the current non-cooperative employers and the recent recession in Dayton has not been devastating to the program, though even for this sample of cooperative

TABLE 79
EFFECT OF DOWNTURN ON THE COOPERATIVE VOCATIONAL EDUCATION PROGRAM

		Cooperative Employer	
		n	%
Any Effect on Program from Economic Downturn			
No Effect		28	57.1
Cut Back due to Lack of Work		5	10.2
Cut Back due to Lack of Money		1	2.0
Prevented Hiring of More Co-ops		4	8.2
Other		2	4.1
Not Ascertained		9	18.4
Number of Cooperative Students Cut Back			
Number of Students:	None	42	85.7
	One	--	---
	Two	2	4.1
	Three	--	---
	Four	2	4.1
	Five	--	---
	Six	--	---
	Seven	1	2.0

TABLE 80
REACTIONS AND ATTITUDES OF EMPLOYERS NOT PRESENTLY IN COOPERATIVE PROGRAM

	Former Cooperative Employers				Non-cooperative Employers			
	First Reason		Second Reason		First Reason		Second Reason	
	n	%	n	%	n	%	n	%
Why Firm No Longer Participates in Co-op Program								
Economic reasons	1	16.7	1	16.7				
Shop unionized	--	---	1	16.7				
Lack of work	3	50.0	--	---				
Hired trainees from program	--	---	--	---				
Participants are immature	1	16.7	--	---				
Trainees unprepared	--	---	1	16.7				
No other reasons given	1	16.7	3	50.0				
Why Firm Has Never Participated in Co-op Program								
Never been asked					8	33.3	--	---
Cannot accomodate part-time workers					4	16.7	3	12.5
Prefer not to hire very young					1	4.2	4	16.7
Legal restrictions					2	8.3	1	4.2
Work requires more training					1	4.2	3	12.5
Other					2	8.3	2	8.3
No other reason					4	16.7	7	37.5
Not ascertained					2	8.3	2	8.3
Conditions Under which Your Firm would Join the Co-op Program								
Under no conditions	--	---	--	---	1	4.2	--	---
If shop were non-union	--	---	--	---	2	8.3	--	---
When help is needed	1	16.7	--	---	3	12.5	--	---
Need to know more about program	--	---	--	---	3	12.5	--	---

TABLE 80

Reactions and Attitudes of Employers not Presently in Cooperative Program (continued)

	Former Cooperative Employers				Non-cooperative Employers			
	First Reason		Second Reason		First Reason		Second Reason	
	n	%	n	%	n	%	n	%
Use of other work-study programs	--	---	--	---	1	4.2	--	---
Would hire with no restrictions	--	---	--	---	2	8.3	--	---
No substantive reason given	3	50.0	--	---	5	20.8	--	---
Not ascertained	2	33.3	--	---	7	29.2	--	---

employers, it is implied that about 36 cooperative students have been cut from their payrolls. (170 employers times an average dismissal of .39 of one student per firm).

C. Evaluation of the Cooperative Program by Participating Employers

Apart from the necessity that demand must exist for an employer's products before he hires labor, the employer also has subjective and objective judgments concerning the cost and value of the program to his operation. Presumably, in an economy where firms exist by making profits, it is necessary for employers to perceive some kind of net benefit to them before they participate in the cooperative program.

One issue, dealt with in Chapter 9 on costs, deals with the relative prices of cooperative student labor versus non-cooperative. Clearly, in terms of saving of fringe benefits, though not in terms of hourly across-the-board wages, it is cheaper for employers to hire cooperative students than other similar labor. If the skills being learned are completely specific to an employer--*i.e.*, they can be used or transferred to no other job with no other employer--then the employer pays all the costs of the cooperative student's on-the-job training. In such a case, we would expect to find no wage differentials (or relatively small differentials) between cooperative employees and other employees in the same job. However, if the skills being learned are general--*i.e.*, they can be used or transferred on other jobs with other employers--then the student will pay the costs of this skill acquisition. We judge that almost without exception the cooperative students are learning general skills on the job. Tables 81 and 82 shed partial light on this problem. Specifically, the types of training shown as being offered appear to fall into the category of general training. (See Table 81.)

Student Time Arrangement. One of the areas where additional costs may be imposed on participating employers lies in the area of scheduling student work. Each student has an alternate who works every other two-week period while he attends formal classroom instruction. There are obvious costs involved in getting the student reoriented into the production process after a two-week lay-off. How great these costs are is not known. However, about 20 percent of the cooperative employers feel that the current time arrangement is not optimal for their operations. Each of the employers which felt the time arrangement was not optimal argued for an increase in the period of time each student worked. Five of the nine indicated work periods greater than two weeks but not more than three months would be more ideal for their operations.

Other Costs to Employers. Only about one-fifth of the employers report no problems--perception of objective or subjective cost--with the cooperative program. Again, about one sixth of the employers cite lack of

TABLE 81
TRAINING RECEIVED BY COOPERATIVE VOCATIONAL STUDENTS

Does Co-op Student Receive Additional Formal Training?[1]		#	%
No		19	38.8
Yes		23	46.9
Not ascertained		7	14.3
Primary Type of Additional Formal Training[1]			
Sales		4	17.4
Management		---	---
Dental Assistant		2	8.7
Use of Machines		1	4.3
Shipping-receiving		1	4.3
Book Shelving and Retrieval		1	4.3
Other		7	30.4
No other types		2	8.7
Not ascertained		5	21.7
Total		23	99.8
Out-of-Pocket Training Costs Incurred by Firm, in Dollars	m	75.3	
	sd	208.9	
Other Costs, in Dollars[1]	m	207.0	
	sd	344.8	

Notes: 1/ Unmeasured are the additional costs implicit in the fact that the employers pay considerably lower fringes to the cooperative students.

m = the sample mean; sd = the standard deviation of the mean.

TABLE 82
COOPERATIVE EMPLOYERS' EVALUATION OF THE COOPERATIVE VOCATIONAL PROGRAM

	Ranked First		Ranked Second	
	n	%	n	%
Factors Determining the Number of Co-op Students Hired				
Number of Students Referred	1	2.0	--	---
Fixed Ratio	1	2.0	--	---
Fixed Number	11	22.4	--	---
Number of Unfilled Vacancies	12	24.5	2	4.1
Number of Trainees Desired as Potential Permanent Employees	7	14.3	6	12.2
Other	2	4.1	--	---
No Other Factors	7	14.3	33	67.3
Not Ascertained	8	16.3	8	16.3
Optimal Time Arrangement for Firm?				
No	10	20.4		
Yes	31	63.3		
Not Ascertained	8	16.3		
More Desirable Time Pattern for Work and Schooling				
2-4 Weeks	3	6.1		
1-3 Months	2	4.1		
Other	4	8.2		
Current Pattern is Best	39	79.6		
Not Ascertained	1	2.0		
Number of Replacements Willing to Hire	m	2.7		
	sd	2.4		
Most Desirable Aspects of Co-op Program				
Source of Work Experience for Students	12	24.5	1	2.0
Source of Money for Students	1	2.0	2	4.1
Reasonable Employment Cost	2	4.1	--	---
Source of Trained Personnel for Summers and after Graduation	13	26.5	4	8.2
Source of Workers Interested in Particular Business	2	4.1	5	10.2

TABLE 82
Cooperative Employers' Evaluation of the Cooperative Vocational Program (continued)

	Ranked First		Ranked Second	
	n	%	n	%
In-School Training Helps Job Performance	4	8.2	2	4.1
Development of Future Managers	1	2.0	2	4.1
Other,	8	16.3	18	36.7
No Other Aspects	3	6.1	12	24.5
Not Ascertained	3	6.1	3	6.1
Least Desirable Aspects of Co-op Program				
No Problems	9	18.3	21	42.8
Lack of Training	1	2.0	2	4.1
Variability of Student Caliber	4	8.2	1	2.0
Immaturity	6	12.2	--	---
Lack of Continuity	8	16.3	2	4.1
Time Required to Train Students	1	2.0	1	2.0
Rating Sheets too Cumbersome	1	2.0	1	2.0
Other	11	22.4	13	26.5
Not Ascertained	8	16.3	8	16.3

continuity as an undesirable aspect of the program.

Another 20.4 percent cite as problems the immaturity of students and variability of the caliber of the students as a problem. Presumably, though, if they hire other young persons, they will have the same kinds of costs with them. We did not specifically ascertain if, in the employer's judgment, cooperative students are, on the average, more immature or varied more in quality than similar aged new hires off the street. Only if the employer can't fire a cooperative student or get a replacement for him does this criticism take on meaning.

Only two (4%) of the employers gave responses which suggested that the students required more on-the-job training than they had anticipated and another 6.1 percent (three employers) cited this as a second problem area with the program. Apparently, either the participating employer had an incorrect judgment of his role in the program to begin with, for on-the-job training is explicit as a function of the program, or the training cost proved higher than the employer anticipated.

Employer Perception of Benefits. Of course, although employers perceive the above costs, they also perceive rather concrete benefits. The relatively small proportion of employers who have discontinued participation in the program indicates that benefits at least equal costs in the mind of participating employers. While somewhat less than 27 percent of the employers cite as benefits those benefits which do not accrue to them directly--namely, the program is seen as a source of income and work experience for students--approximately 27 percent perceive the program as a direct source of trained personnel either on a permanent or a summer basis. Another 16.4 percent of the employers cite as reasons types of benefits which directly imply a reduction in their labor costs, training costs or costs for searching for new talent.

On net, then, it appears that those participating employers realistically assess the nature of costs and benefits confronting them when they agree to participate in the program. Unfortunately, we cannot arrive at more than an approximate judgment as to the exact quantity of these costs and benefits. Suffice it to say, the balance is such that significant numbers of employers find the program acceptable to them. If ways could be found to cut the direct across-the-board wage rate as well as fringe wage cost, one would certainly be able to increase employer participation in the program. However, it is significant that employers chose to reduce real wages not through lower across-the-board wages, where the exact differential can easily be measured, but through lower fringes, the value of which is not unambiguously measureable. Thus, cutting across-the-board wages may be a politically difficult policy to carry out.

D. Summary

One fundamental factor one must consider when one contemplates the generalization of a cooperative vocational program such as that operated in Dayton, Ohio is whether or not the derived demand exists for the specific labor services such a program has to offer. In the specific case of this study, the recent economic down turn in Dayton, Ohio has had a small impact on the program. However, this impact has not affected the vitality of the program in any material fashion. Also, among those employers who are not currently participating there is the potential for expanding the program. It appears, however, that the most desirable employers from the standpoint of the program's aims have already been drawn into the program.

The next factor one must consider is the possible cost to the employer of participating in the program. Given the present program structure most of the training is general rather than specific to the firm so that the student bears the cost of this training through a lower real wage. However, some costs accrue to the employer due to a higher supervision rate since student workers alternate in a given job at two week intervals. There is some loss in efficiency at each transition period as the alternate student becomes current on the job. Both the student and the employer are likely to share in this cost. The elasticities of demand and supply of labor will determine exactly how this cost is shared. Finally, although the employers claim to lay out several hundred dollars in direct and opportunity costs, the lower wage rate of the student could easily cover this cost. Indeed, unless the firms are altruistic, we would expect the long run average costs to the employer of the program to be covered by the average benefits to the firm.

In short, from an economic standpoint to the employer, we see no obstacles to an expansion of the program. The obstacles to expansion are likely to be greater in terms of establishing the appropriate educational cadres in the school system itself. The Dayton experience is, after all, fairly unique with a high degree of esprit among teachers, students and employers. This kind of environment, which may be so necessary for the success of the same program elsewhere, may take time to establish and nurture.

CHAPTER 9

ANALYSIS OF THE RELATIVE COSTS OF THE COOPERATIVE AND COMPREHENSIVE HIGH SCHOOL PROGRAMS

A. Introduction

Although this study is not a cost-benefit analysis, no economic analysis of a program involving investment in human resources would be complete without an analysis of costs. Accordingly, the available cost figures for the non-cooperative high schools and the Patterson Cooperative Vocational High School were collected from the Dayton Public School System.

B. The Data

Unfortunately, the data are far from ideal. No cost data exist by individual high school, thus precluding any cross-section analysis and reducing significantly the number of observations for analysis. Also, the data are reported for a mixture of fiscal and calendar years. It was unclear from the data records provided exactly which set of costs represented the switchover from a calendar to a fiscal basis. Also, not all of the cost figures provided are for actual costs. For three of the eleven years, the data are projected costs rather than actual costs. Also, in the early sixties, Patterson High School enrolled only the last three years of high school. In recent years, Patterson began enrolling at the freshman level. Data were not available to adjust costs or enrollments so as to standardize the data on one or the other basis. Finally, only eleven observations in time series are available. Thus, the estimated costs presented below are subject to considerable error. Efforts to estimate total cost functions and thereby get estimates of marginal costs, the cost of enrolling one additional pupil, were not successful due, we feel, to errors and inconsistencies in the data which could not be overridden. The data below can therefore be considered only as approximations.

Relative Costs. Table 83 details the available cost data. The total expenditures figure includes lump sum capital costs.[1] Average total costs,[2] that is, total expenditures divided by total enrollment, are $345 for the non-cooperative high schools over the 11-year period for

---

[1] Ideally, these capital costs should be prorated over time among successive cohorts of students who use the capital. The poor quality of the data would make this a superfluous exercise, however.

[2] Variable plus capital costs.

TABLE 83
TOTAL EXPENDITURES (CURRENT PLUS CAPITAL) AND AVERAGE DAILY ENROLLMENT, PATTERSON COOPERATIVE HIGH SCHOOL AND DAYTON COMPREHENSIVE HIGH SCHOOLS
1959-60 TO 1969-70

Fiscal Year	Average Daily Enrollment, October		Total Expenditures		Average Expenditures		
	Non-cooperative	Cooperative	Non-cooperative	Cooperative	Non-cooperative	Cooperative	Ratio
1959-60	10,765	987	3,078,431	396,915	286	402	.711
1960-61	11,312	950	3,286,764	414,430	291	436	.667
1961-62	12,455	964	3,514,790	428,679	282	445	.634
1962-63	13,636	1,071	3,903,843	461,090	286	431	.664
1963-64	14,927	1,139	4,163,037	476,811	279	419	.666
1964-65	15,342	1,198	4,459,703	466,535	291	389	.748
1965-66	15,518	1,186	5,241,465	598,657	338	505	.669
1966-67	15,780	1,143	5,653,383	658,356	361	576	.627
1967-68	15,525	1,077	6,196,231	796,248	399	739	.540
1968-69	14,934	1,577	7,687,688	994,637	515	631	.816
1969-70	14,906	1,660	6,880,401	1,114,582	462	671	.689
Average Total Cost					345	513	.673

which we have data. Average total costs for Patterson High School are $513 over this period. These costs are not deflated by a price index. For the 1965-66 fiscal year, when the first sample cohort would have graduated, average costs are $338 and $505 per pupil enrolled for the non-cooperative high schools and Patterson, respectively. For 1969-70, when the second cohort in our sample would have graduated, respective average total costs are $462 and $671. The average total cost per student enrolled in the non-cooperative high schools is approximately two-thirds of that for a student enrolled in the cooperative vocational program. However, the attendance figures used are average daily enrollment in October of the school year in question. This enrollment figure counts a student whether he is actually attending classes or not. This is crucial in the cooperative case since juniors and seniors in non-cooperative high schools attend school full-time for 9½ months while juniors and seniors at Patterson attend schools half-time (two weeks in class alternated by two weeks at work) for 11 months. Each Patterson senior, if he is never absent, is in class attendance at Patterson only 5½ months. So, a cooperative junior or senior counts as only .579 of one comprehensive high school junior or senior. Thus, for some purposes, one might wish to inflate the costs of the cooperative program, if one desired to estimate the cost of teaching the student in average daily attendance or a full time daily basis, the number of students actually in class at a given time. Unfortunately, average daily attendance figures were not available for the years in question for either the non-cooperative or the cooperative high schools. But under certain assumptions we can gain an idea of how costs would increase for the cooperative program. For 1969-70, if we assume that 1,660 enrollment is 50 percent juniors and seniors, then, adjusted enrollment is 830 + (830 x .579) = 830 + 481 = 1,311. This raises average costs per full-time cooperative student in class attendance to about $850. Of course, reporting the non-cooperative high schools on an average daily attendance basis would increase their costs per student also, but not by as much as the comprehensive high school costs. The costs of the non-cooperative high schools become about 54 percent of those of the cooperative high school.

Costs to Cooperative Program Establishments. In addition to the costs of schooling, the costs of the on-the-job training should be added to the total costs of the cooperative program in order to estimate the total resource costs of the program. If the program is doing what it says it is--training people on the job--these costs will not be trivial. Of course, students in the non-cooperative program will incur on-the-job training costs once they enter the job market, too. These, too, may be large. So, to a certain extent the cooperative program simply incurs these costs at a different point in time. Thus, there may not necessarily be any major cost differences among curricula due to on-the-job training when one considers the whole life cycle of costs which is implied by the pursuit of a given curriculum.

The sample of fifty establishments participating in the cooperative vocational program was asked if any out-of-pocket costs had been incurred for formal on-the-job training of the cooperative students.[3] Forty-nine establishments were eligible to reply to this question. Of these, 19 indicated that the cooperative students received no additional formal on-the-job training at all. Eight establishments failed to answer the question. However, over the total sample of establishments who answered the question, these out-of-pocket costs average to about $75 per student. When asked if they incurred any "other" costs, 17 of the 49 establishments indicated that no other costs were incurred. Nineteen establishments did not reply to the question. Of the establishments which did answer the question, an average cost outlay per student of $207 was indicated. These costs were opportunity costs in addition to direct cost outlays and represented such things as the value of supervisory time, etc.

Foregone Wages. Finally, the cooperative students may have incurred additional costs in terms of foregone wages. Mainly, these would be measured in terms of the difference in wages they were paid at any time during their employment and the wages paid to full-time employees for the same job definition. There is, of course, always the possibility that a cooperative student may be doing the same job as a regular employee but have a different job definition and, hence, be paid a different, and presumably, lower wage. In such a case, we would be unable to easily detect the opportunity costs incurred.

It is clear that cooperative students do earn a lower wage for the same work and, hence, suffer opportunity costs. Of course, non-cooperative high school students will also suffer such foregone earnings costs when they are newly hired, too. Twenty-seven of the establishments (55.1%) which participated in the cooperative program report that cooperative students are not eligible for fringe benefits. About 33 percent of the firms (15) indicate that co-op students do not earn time toward seniority. Twelve percent indicate that co-op students cannot qualify for promotion. Thus, cooperative students suffer substantial opportunity costs through loss of fringe benefits.

Sixty-one percent of the firms indicated that they paid cooperative vocational students the same rate that they paid other beginners. Overall, the average rate paid to cooperative students was $1.82, while the average hourly wage rate paid to other beginners was $1.86. The difference is quite small and not likely to be statistically significant. Thus, the major costs in terms of foregone wages lie in the lower fringe benefits which are paid to the cooperative vocational education students.

---

[3] Formal on-the-job training would involve the use of such techniques as classroom instruction, laboratory or shop demonstrations, etc.

C. An Overview of Costs to Cooperative Vocational Education

This brief discussion of costs points out that cooperative students incur substantial opportunity costs while training. In addition, for those employers reporting usable data, their cash and implicit cost outlays appear to approach about $300 per student. In addition, the community spends from one-third to one-half more in classroom instruction on a cooperative student as on a non-cooperative student. This makes cooperative education appear expensive indeed. However, this is not quite the proper way to look at the cost picture. When we deal with human capital investments, most people understand that we should look at the life cycle of benefits. They are often not quite so clear on the point that the life cycle of investment costs should also be considered. When taken in this light, the present value of educational investment costs for the average cooperative student may be more, less or equal to that of the average non-cooperative student. Each curriculum has its own generic investment cycle. Take, for instance, the average academic student. High school graduation is only an intermediate investment for him, for his aim more frequently is higher education in a college or university compared to the cooperative student. These costs are directly linked to the overall investment plan of the academic student. They are substantial. Recall that data in Chapters 3 and 6 indicate a higher frequency of investment in higher education for the non-cooperative student. Then, once he completes his formal education, he, too, must incur on-the-job training costs. (In fact, it is desirable to enter a job ladder which does provide extensive opportunity for on-the-job training. It is this investment which continually increases one's income.) In addition, the firm will also incur opportunity costs. In short, from the standpoint of the individual and society, the cost of the cooperative or academic curriculum does not end at high school graduation. Rather, the cost of each curriculum is the present value of the life cycle of costs implied by each investment strategy. Since no one has yet investigated empirically such life cycle costs to a secondary curriculum, we cannot say at this time if cooperative education costs more, less or the same as other high school curricula.

Finally, as the reader is aware, what ultimately matters is what the net benefits are (the present value of benefits less the present value of costs). This discussion does not treat of this latter issue at all. Yet, ultimately this is the question which must be asked. For, until this question is both asked and answered, all piecemeal analysis can only be suggestive of the relative educational and economic efficiencies of different educational strategies for secondary youth.

CHAPTER 10

SUMMARY AND REVIEW

A. Introduction

This study has a three part structure. First, Chapter One described the critical methodological problems inherent in the study and considered as well the basic aims and scope of the analysis. Second, Chapters Two through Five consisted of a *descriptive* analysis of the study sample. Our aim in this section was to acquaint the reader with most of the substantive issues of the study. Finaly, Chapters Six and Seven rigorously developed study implications and policy conclusions, while Chapters Eight and Nine analyzed the reactions of employers to the program and the relative costs of the program.

B. Methodology

The major methodological problems in this study are the lack of a true experimental design and non-response bias. As discussed in Chapter One, the cooperative and non-cooperative students presumably come from *different* populations. Evidence supporting this assertion was cited in several places in Chapters Two through Five. Given that our two student populations are different from the outset makes comparison difficult to interpret. For example, to what extent do lower grades during the senior year in high school represent a program impact for the cooperative students and to what extent are these lower grades attributable to the inherent differences between the two student populations? Such questions are extremely difficult to answer precisely given existing statistical techniques. The use of multivariate regression analysis can only partially overcome this problem.

The second major problem was response bias. Since the survey was conducted largely by means of mail questionnaires and since our response rate was in the neighborhood of 30 percent, the question naturally arises as to whether the mail respondents are in fact representative of the population as a whole. In an effort to determine the extent of this bias, we conducted personal interviews with a small randomly selected subset of the remaining non-respondents. However, since our response rate for personal interviews was also substantially below 100 percent and was non-random, we cannot be sure that the personal follow-up group was in any sense representative of those students who failed to respond to the mail questionnaires. Thus, we are limited in our ability to interpret the nature and extent of the non-response bias. In one final effort to gain some conception of the nature of non-response, we shortened the long-form mail questionnaire and re-interviewed by mail, following the same procedures as with the long-form mail questionnaire. These data are analyzed in Appendix G and suggest the following: First, the respondents to the two different types of questionnaires come from different populations of the total student body. Second, exclusion of the short form respondents from the analysis performed with the study sample may result in lower estimated benefits to the program for some indices of benefit.

As we have already noted, policy conclusions and implications which the reader draws must be considered in light of these problems.

C. Descriptive Analysis

Chapters Two through Five then undertook a descriptive analysis of the cooperative and non-cooperative groups in terms of education, attitudinal, labor market and environmental factors.

In Chapter Two, in a brief investigation of the non-school and non-work environments of our two groups, we found that cooperative students generally came from homes in which the fathers' occupations had a lower socioeconomic status than did the non-cooperative students. Further, the fathers of cooperative students tended to have fewer years of education than did the fathers of non-cooperative students, and cooperative students came from homes with a lower per capita income than did academic non-cooperative students. The important question we raised with regard to these environmental factors was how the educational and labor market performances of the students might be affected by these factors.

Chapters Three through Five then proceeded to a description of the cooperative education program and some of its impacts. As we stressed throughout, rigorous evaluation is hampered by the absence of an experimental design; i.e., since the cooperative and non-cooperative students came from different populations, we cannot be sure of the extent to which differences between the two groups at the end of the program can be attributed exclusively to the impact of the program. In addition, we ignored tests of significance in Chapters Three through Five, so the study at that point was a description rather than an analysis. The description, though, did point out many of the substantive issues that were subsequently dealt with in the regression models. For example, we noted in Chapter Five that cooperative students earned noticeably higher hourly wages than did non-cooperative students during their high school years. Since this wage differential may be a major program impact, hourly wage rates were included in certain of the regression models.

Chapter Three, then, found cooperative students taking notably more credits in vocational education courses than non-cooperative students. We also saw that, though cooperative students tended to have higher grade point averages during their freshman year, over time these averages tended to fall. This characteristic may be a program impact, with the cooperative students trading off study time for more time at work. From the point of view of the student, such a tradeoff may be perfectly rational and yield positive benefits. Chapter Three continued with an examination of post-high school educational experiences, with particular emphasis upon the problems inherent in attempting to evaluate post-high school educational activity as a program output. For example, given the lack of experimental design in this study and given the distinct likelihood that cooperative and non-cooperative students place a different value upon the acquisition of advanced education, socio-economic status of the job, and so on, comparisons, say of earnings per month for cooperative students with no post-high school education and non-cooperative students with some post-high school educational training do not appropriately reflect program impacts. Thus, comparisons of money rates of return to education between the two groups may not be a valuable index of program impacts.

We then turned in Chapter Four to considerations of the student attitudes regarding the relationships between their high school educational programs and their job skills. In general, we found that, in terms of both attitudes and relevance of education, cooperative students were far happier with their high school educational experiences than were non-cooperative students. Unfortunately, the lack of experimental design of this study again clouds the net extent to which these attitudes could be attributed to the program.

Next, Chapter Five undertook a description of the labor market experiences of the two groups in the study sample, both during high school and after high school. We generally saw that cooperative students earn higher wages, both during and after high school, that they experience more months of employment during high school, and fewer months of unemployment after high school. We noted, at this point, several potential explanations of these data. One, for instance, is that Dayton area employers may recognize that the cooperative program provides a free screening and selection process for potential full-time employees. The extent that the program cuts down on costs to the firm of locating good employees may be reflected in the relatively higher wages of the cooperative students. A second, related possibility is that the teachers and other staff at Patterson Cooperative may have a better feeling for the Dayton labor market situation than do their counterparts at the non-cooperative schools, thus tending to raise employment rates and lower unemployment rates of the cooperative students. The later analyses in Chapter Seven tend to bear out this set of hypotheses since in the analyses of curriculum structure, cooperative students have an initial labor market advantage on the first job which invariably disappears on the last job held since leaving high school. Such factors as noted above are short-run in nature and we would expect their effects to disappear over time.

Chapters Six and Seven employ regression analysis to investigate the impact of the cooperative program. Two methodological approaches are used. The first involves the specification of the high school curriculum in a dummy variable form in order to test for differences in the average level of effect of the four curricula. The second involves the description of a student's curriculum in terms of the number of academic and vocational or cooperative vocational credits plus adding a dummy variable to distinguish a cooperative student from a non-cooperative student. The results of the two models generally support each other even though relatively high multicollinearity among several of the variables in the second approach increase the risk of accepting a variable as having zero effect when in fact this is not the case. The models explaining educational performance were more uniform in their ability to explain the variance in the dependent variables than were the models which explained labor market behavior. The models to explain voting behavior were occasionally not significant as were various models for different subgroups for the labor market analysis. For the education variables the models which analyzed curriculum structure /Equation (2)/ generally had higher coefficients of determination than the model which specified curriculum as a set of dummy variables. However, for the labor market analysis, there was no clearcut advantage of one equation form over the other in these terms.

Next, we should note that both for the educational and labor market analysis the independent variables generally had statistical effects which were consistent with our a priori judgments and knowledge of the behavior of thses variables in similar analyses.

Education Effects. The indices of educational performance in this study are treated as intermediate and not as final outputs. As such, it is difficult to gauge what will be ultimately the final implications of a positive experience of the cooperative program for these indices. In addition, such indices as the grade point average are not unambiguous indices of performance among the curricula because rational students will make conscious trade-offs between acquiring formal knowledge and classroom training versus knowledge gained on the job. These trade-offs, even if they result in a lower GPA, may result in greater lifetime net advantages for a given group. In short, the evaluation of a multi-product multi-stage investment process is probably one of the most complex problems in the social sciences. A study of this type barely begins to scratch the surface of this complex organic process.

Nevertheless, we can say something about the cooperative program's impact, even though we may not know the exact reasons why certain effects are revealed in the data. First, with respect to senior or last full year grade point average, cooperative students perform at a lower average level than do academic students. Once one controls for the structure of academic and vocational credits per se, differences among the curricula tend to disappear. Cooperative vocational credits have no different impact than vocational credits earned in the school system as a whole.

The results are similar for percent of time absent in the senior or last full year of high school. There is a slight advantage in favor of the cooperative curriculum when it is compared against the other three curricula. However, when one analyzes the effect of the cooperative program in terms of curriculum structure, this advantage effectively disappears except for the Total Sample, the 1966 Cohort Black and 1966 Cohort Male subgroups. Only for the 1966 Cohort Black does a person's cooperative vocational credits have an impact.

Cooperative students have a higher probability of graduation from high school than do general and vocational curriculum students but they have no advantage over academic students. Analysis of curriculum structure shows that academic and vocational credits have a positive statistically significant impact on the probability of graduation but cooperative vocational credits have no impact distinct from vocational credits in general and there is no difference in the average probability of graduation between cooperative and non-cooperative students once one controls for curriculum structure.

Academic students have a higher average probability of acquiring post-secondary education compared to cooperative students but there are no differences among cooperative and general or vocational students. Within the curriculum structure only academic credits have a positive and statistically significant impact on the probability of acquiring post-secondary education.

Finally, there were no discernable statistically significant effects of either curriculum or curriculum structure on the probability of registering to vote. Indeed, for some sample subgroups, the models were not statistically significant.

Earnings and Employment. We should note at the outset of this review that in economic terms we did not employ the most appropriate way to test the impact of the cooperative program. Such a test would entail consideration of the discounted value of one's lifetime earnings profile as well as a consideration of costs measured and discounted in a similar manner. Analysis of the production function of the separate high school curricula would also be appropriate though our limited efforts to do this proved disappointing.

In any case, our analysis suggests that the cooperative program does have favorable labor market effects, independent of any effects which may be attributable to initial differences in the student populations being compared. We suggest this for two reasons. First, the impact of the curriculum is much stronger for experience on the first than on the last job held since leaving high school. This suggests that program characteristics which have a short run effect are operating rather than long term population differences among the students in the different curricula.

Second, the analysis of curriculum structure generally shows that some combination of vocational or academic credits are the factors which have significant effect rather than cooperative vocational credits or cooperative status. That is, vocational credits are often statistically significant in their positive effects but it doesn't appear to make any difference whether one earns these vocational credits at a cooperative or non-cooperative high school. What is important for labor market purposes is that one earn vocational credits. And, this, of course, is a major emphasis of the cooperative program.

This finding of positive labor market effects of vocational training is contrary to the assessment and tone of the analysis of the Special Task Force report on Work in America.[1] In the words of this study...,"it appears that a very expensive form of education (i.e. secondary vocational education) - costing perhaps 50-75% more than other high school curricula - has a very low utility."[2] In due respect to the Task Force Study and in clear recognition of the methodological problems of this present case study of cooperative education, we feel that this judgment of the Special Task Force is unfounded at worst and based on inadequate data at best.

The bibliography of Work in America does not reveal several of the case studies, for instance, which report positive effects of vocational education. The one major study they do cite has serious non-response bias.[3] The Task Force Study also falls into the trap of only considering initial life cycle costs of the curriculum-career path which the analysis in Chapter Nine points out as clearly inappropriate. In short, we have no particular brief for or against secondary vocational education but we do not feel we are being either coy or overly cautious when we say the evaluations to date (almost all of which are case studies) are so conflicting with evidence both pro and con that a dispassionate investigator can hardly make a firm judgment on the relative educational efficiency of secondary vocational education.

---

[1] Work in America, Report of a Special Task Force to the Secretary of Health, Education and Welfare, prepared under the Auspices of the W.E. Upjohn Institute for Employment Research, Cambridge, Mass.: The MIT Press, 1973.

[2] Ibid., p. 139

[3] See Gerald G. Somers, et al., The Effectiveness of Vocational and Technical Programs: A National Follow-up Survey, Madison, Wisconsin Center for Studies in Vocational and Technical Education, University of Wisconsin, 1971.

Indeed, the mixed findings of our present study is only one more morsel of evidence based on a framework of analysis common to this type study which the authors feel is fundamentally inadequate to perform the task at hand--namely, to discover the relative educational efficiencies of different high school curricula.

This brings us to a final judgment based on the analysis of this study. Even though the analysis of the employer sample suggests that the cooperative program could be expanded, and even though we know that the labor force participation rates of 14, 15 and 16 year olds is far from trivial and the student workers could be absorbed, we also know that the Dayton program is a very special case. It is lodged in a neat, clean, relatively prosperous and politically stable midwestern Ohio city. The overall school system, on the basis of casual inspection, seems excellent. The cooperative program is of high quality witn considerable esprit among students, faculty and administration. (Indeed, this study suggests that the vocational training in the non-cooperative high schools is also well thought out and managed.) Therefore, we suggest it is highly unlikely that the unique structure of this program could be generalized without revision to other major urban areas. Thus, the structure of costs and benefits to various groups would also change. This is stating the obvious, of course. In addition, we should also recognize that some socio-demographic groups are likely to benefit less from the program than others, though unfortunately non-response bias and attendant small sample sizes made it difficult to generalize about blacks and other disadvantaged groups.

Therefore, we conclude that this study is only suggestive of the potential direction which public policy should take in the sphere of vocational and cooperative vocational secondary education.

Explicit hoc totum;
Pro Christo da mihi potum.

...An Obscure Medieval Monk

BIBLIOGRAPHY

Andrews, Margaret E. "Cooperative Work Students," *The Journal of Busi-Education*, Vol. XXIX, No. 8 (May, 1954), pp. 329-30.

Benjamin, Gerald R. *Significant Job Success Factors Found in Work-Study Programs in Five Major New York State Cities*. Final Report. New York State Education Department, Albany. Bureau of Occupational Education Research, Syracuse University, New York. Division of Special Education and Rehabilitation. July, 1967.

Christensen, Virigil E. *Factors Influencing Acquisition and Retention of Learning in Vocational Agriculture*. Doctoral Study. University of Wisconsin, 1964. D.A. 25:2344.

DePianta, J. J. "Follow-Up of a Work-Experience Program," *Balance Sheet*, Vol. 49 (May, 1968), pp. 404-405.

Dillon, Harold J. *Work Experience in Secondary Education*. New York: National Child Labor Committee, 1946.

Eisen, Norman Behr. *Work Experience Education in California High Schools: Status, Evaluation, and Implications*. Doctoral Study. University of Southern California, 1966. D.A. 26:7111.

Ferguson, Edward, Jr. *A Pilot Program Comparing Cooperating and Project Methods of Teaching Distributive Education: Final Report of Project 301*. Joint Council on Economic Education, New York. National Business Education Association, Washington, D.C., 1967. ED 019 473.

Ferguson, Edward T. *A Comparison of the Effectiveness of the Project and Cooperative Methods of Instruction on Selected Competencies in Distributive Education at the Secondary Level*. Research Report No. 4, Department of Secondary Education and Curriculum, College of Education, Michigan State University, East Lansing, April, 1968. ED 020 419.

Fielstra, Clarence. *Work Experience Education Program in Santa Barbara County High School Districts, Report of an Evaluative Study*. Santa Barbara: Rood Associates, 1961. ED 001 667.

Gujarati, D. "Use of Dummy Variables in Testing for Equality between Sets of Coefficients in Two Linear Regressions: A Note," *The American Statistician*, 24 (February, 1970).

Gujarati, D. "Use of Dummy Variables in Testing for Equality between Sets of Coefficients in Linear Regressions: A Generalization," *The American Statistician*, 24 (December, 1970).

Haines, Peter G., and Coleman, Brendan G. *How High School Cooperative Trainees Fare in the Labor Market*. Summarized in *National Business Education Quarterly*, Vol. 33, No. 1 (Fall, 1964), pp. 23-24.

Haines, Peter G., and Ozzello, Lawrence M. *How High School Cooperative Trainees Fare in the Labor Market*. *Phase C, A Follow-up Study of 1964 Graduates Ten Months after Graduation*. East Lansing: Michigan State University, College of Education and Michigan State Department of Public Instruction, Lansing, August, 1966. ED 013 919.

Hamburger, Martin. *Report of the Evaluation Study of the Municipal Cooperative Education Program*. New York: New York City Department of Personnel, April, 1965. ED 012 719.

Hecht, Joseph C. *A Follow-Up Study of High School Graduates of Three Retailing Programs*. Doctoral Study. New York University, 1963. D.A. 24:2736.

Holloway, Lewis D. *An In-Depth Study of the Cooperative Vocational Education Program; Champaign, Illinois: Champaign Central High School*. Doctoral Study. University of Illinois, 1967. D.A. 28:4821-A

Laumann, Lydia H. Fischer. "Effects of Project Headstart, Summer, 1965: A Second Look at the Equality of Educational Opportunity Study," Discussion Paper 47-69, Institute for Research on Poverty, University of Wisconsin, Madison, Wisconsin, August 1969.

Martin, Charles W. *A Study of the Cooperative Office Work Experience Program in New Jersey, 1958-1959*. Doctoral Study. Temple University, 1962. D.A. 23:2448.

Mason, Ralph E., and Haines, Peter G. *Cooperative Occupational Education and Work-Experience in the Curriculum*. Danville, Illinois: The Interstate Printers and Publishers, Ind., 1965.

Miller, Clarence M. *An Experiment Designed to Determine the Holding Power of a Work-Experience Program for Students Classified as Potential Dropouts*. Doctoral Study. Colorado State College, 1968. D.A. 29:2444-A.

Mock, Oliver P. *An Evaluative Study of the Federally Reimbursable Part-Time Cooperative Distributive Education Program in the Public Secondary Schools of Arkansas*. Doctoral Study. University of Arkansas, 1965. D.A. 26:4341.

Mundstuk, Jay. "Cooperative Education--Trip to Dayton, Ohio."
"Report on Field Study of Cooperative Education at Patterson High School in Dayton, Ohio."
"Review of 10 of the 14 Occupational Divisions at Patterson."
"Other Work Related Programs in Dayton Public Schools."
U.S. Department of Labor, Mimeographed, December 31, 1970.

Nennich, Florence. "Meeting Individual Needs of Office Clerical Students through the Cooperative Office Education Program," *Business Education Forum*, Vol. 23, No. 5 (February, 1969), pp. 5-7.

Reiss, Albert J., Jr., *et al*. *Occupational and Social Status*. New York: The Free Press of Glencoe, Inc., 1961, Appendix B.

Robertson, Leonard F. *An Exploratory Study of the Effect of Cooperative Education Programs in Beginning Occupations on Selected Employment Factors*. Doctoral Study. Colorado State College, 1965. D.A. 26:7182.

Sanders, Lester E. *A Comparison of Two Methods of Preparing Youth for Employment: Cooperative Occupational Education Versus the Preparatory Vocational-Technical Education*. Doctoral Study. University of Missouri, 1967. D.A. 28:4059-A.

Smalley, Lee H. "Evaluating Your Program," *Industrial Arts and Vocational Education*, June, 1965, p. 23.

Tuttle, David C. *A Follow-Up Study of Graduates' and Employers' Opinions of a Cooperating Training Program*. Doctoral Study. Colorado State College, 1965. D.A. 28:66-A.

Wilson, Thomas P. "Critique of Ordinal Variables," *Social Forces*, 49 (March, 1971).

Wohl, Seth F. *An Evaluation of the Municipal Cooperative Education Program of the High Schools of the City of New York*. Brooklyn: New York City Board of Education, Bureau of Educational Program Research and Statistics. June, 1968. ED 041 958.

Zancanella, James A. *An Exploratory Study of the Effect of the Secondary School Cooperative Part-Time Training Program in the Distributive Occupations on Selected Employment Factors*. Doctoral Study. Colorado State College, 1965. D.A. 26:5314.

APPENDIX A

STUDENT SAMPLE DESIGN
EMPLOYERS SAMPLE DESIGN

APPENDIX A

Student Sample Design

Dr. Charles Palit
Wisconsin Survey Research Laboratory
University of Wisconsin, Madison, Wisconsin

A. Overview

This was an analytic survey. Its primary purpose was to evaluate the impact of the cooperative vocational program in Dayton, Ohio, on those students in the program. To measure this impact, attention was focused on those high school students graduating in 1966 and 1970. This target population was divided into two sub-populations or domains of study, viz., students in the cooperative vocational education program and the other secondary students in the same graduating class of the comprehensive high schools. Separate samples were drawn from each of these sub-populations for each of the years 1966 and 1970. Each of the four sub-samples--1966 experimental and 1970 experimental, 1966 control and 1970 control--originally had the same target sample size of 400. A justification of this choice can be found in Cochran.[1] The strategy chosen is to minimize the average variance of the difference between pairs of sub-population means for the six possible differences. Cochran observes that for fixed budget, the sample size for the h^th^ sub-population, say n_h, should be such that

$$n_h \text{ is proportional to } \frac{S_h^2}{\sqrt{C_h}}$$

where $S_h^2 = \frac{N}{(N-1)} \cdot$ (sub-population's variance)

and C_h = cost of taking an observation from the h^th^ sub-population.

On the assumption that C_h and S_h are the same for all sub-populations, the logical choice of strategy is to take equal sample sizes from each sub-population.

Students in the cooperative vocational program are referred to as the experimental group, while the other students are referred to as the control group.

---

[1] William G. Cochran, Sampling Techniques, Second Education, New York: John Wiley & Sons, 1963, p. 145.

B. Sampling Procedures

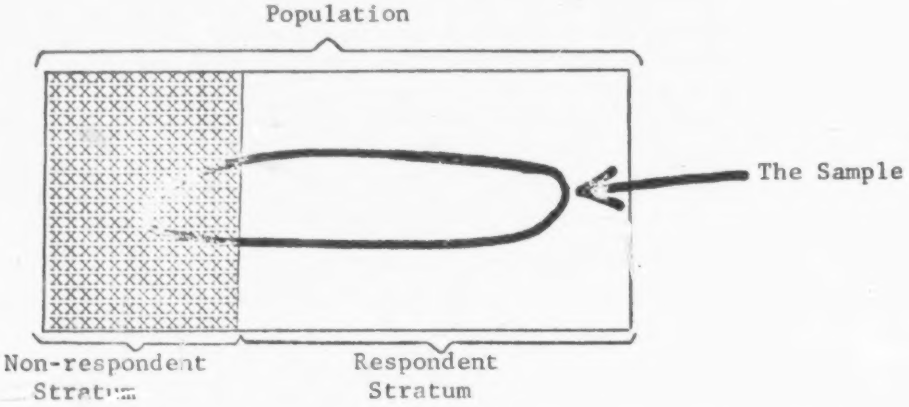
Each of the four sub-samples--1966 experimental, 1970 experimental, 1966 control, and 1970 control--originally had the same target sample size of 400.

However, since the 1970 cooperative graduationg class was under 400, this target size could not be achieved. All students in the 1966 and 1970 cooperative graduating classes were surveyed. This resulted in a total of 424 usable observations for the 1966 experimental group and 335 usable observations for the 1970 experimental group.

A proportionate stratified random sampling design was used to select both the 1966 and 1970 control sample. Each of the ten high schools in Dayton, Belmont, Dunbar, Fairview, Kiser, Meadowdale, Roosevelt, Roth, Stivers, Col. White, and Wilbur were considered as separate strata. The sampling rates in each case and for both years were 1 in 1.99. These procedures yielded a possible 2,000 observations for the 1966 control group and a possible 1,923 observations for the 1970 control group.

Data Collection Procedures. Mail questionnaires were used to collect the data from the respondents. A total of four mailings was made to all respondents who did not respond. Personal follow-ups were then made to a sample of non-respondents. A rationale for such a procedure can be found in Des Raj.[2] Briefly, in any survey, we can regard the population under study as being "naturally" divided into two strata--a stratum for people who will respond and a non-respondent stratum, as illustrated in Figure 1.

Figure 1



---

[2] Des Raj, The Design of Sample Surveys, New York: Mcgraw-Hill, 1972, p. 158.

In this diagram, the ellipse surrounds those population elements in the sample, some of whom are in the respondent stratum and some of whom are in the non-respondent stratum. The exact position of the dividing line between strata will, of course, vary from survey to survey. If we ignore the non-response and use the sample from the respondent stratum to make inferences about the whole population, then we are assuming that the elements in the non-respondent stratum are no different, with respect to the variable(s) of interest, from the rest of the population; i.e., the non-respondent stratum is viewed (for the variables of interest) as a random sample from the population as a whole.

If the non-respondent stratum is very small, i.e., if the response rate is high, we might be willing to make such an assumption even if we suspected that it might fail, supported by the knowledge that with a high response rate, a difference from the non-response stratum would produce little change in our overall estimate. However, if we do not think that the response rate is high enough to give us this kind of protection, we may want to intensify our efforts to reduce the size of our non-response stratum. At the same time, we may not have the resources to process all the non-response sample elements. (Note that typically, elements in the non-response stratum are very expensive to process.) In such a case, we may elect to reduce our cost by pursuing a sub-sample of the non-respondents. Results from respondents in this sub-sample are then weighted and pooled with the results from the other respondents to generate estimates, etc. How this can be done is illustrated by the following theorem due to Hansen and Hurwitz 1946 which we quote from Des Raj:

> "Let a random sample of n units contain n_1 units from the response stratum and n_2 from the non-response stratum. If information can be collected on a sample of u = n/k units from the second stratum, an unbiased estimate of the population average for y is given by
>
> $$\hat{M} = \frac{n_1\bar{y}_1 + n_2\bar{y}_2}{n}$$
>
> with a variance of
>
> $$V(\hat{M}) = (\frac{K-1}{n})W_2S^2_{y_2} + (\frac{1}{n} - \frac{1}{N})S^2_y$$
>
> where W_2 and S^2y_2 represent, respectively, the weight and variance of the second stratum."[3]

$S\overset{2}{y}$ is the variance of the $\bar{y}_n$ the sample mean if all elements of the sample respond.

---

[3] Ibid.

Employers Sample Design

A. Overview

A sample of employers was interviewed to obtain their view/evaluation of the program on economic and educational grounds, as well as to gain their appraisal of the extent to which the program could be expanded.

The population of potential employers in Dayton was split into two parts: those already participating in the cooperative employment programs and those not participating. Separate samples each of size 50 were drawn from each of the groups and mail questionnaires were sent to the relevant person in the sample company.

B. Sampling Procedures

In the cooperative employer group, the 50 firms were selected with probability proportional to the number of cooperative vocational education employees on their payrolls and with replacement, while in the non-cooperative employer group 50 firms were selected with probability proportional to the number of people employed by the firm, and with replacement. The cooperative employers were selected with probability proportional to the number of cooperative employees because it was felt that the variables of interest would be correlated with the number of cooperative employees, and the use of this number to control the selection probabilities would provide more precise estimators than a simple random sample of cooperative employers. As an illustration, consider the problem of estimating the total of some characteristic Y in the population. An unbiased estimator is

$$\hat{Y} = \frac{1}{n} \sum_{i=1}^{n} y_i / p_i$$

where n is the sample size,
y_i is the y-value for the i^{th} sample unit, and
P_i is the probability of selecting the i^{th} unit.

The variance of this estimator is

$$V(\hat{Y}) = \frac{1}{n} \sum_{\substack{\text{all} \\ \text{pairs} \\ \text{of} \\ \text{elements}}} P_i P_j \left(y_i / p_i - y_j / p_j \right)^2$$

Clearly, the more constant the behavior of y_i/P_i the closer $V(\hat{Y})$ will be to zero. Our argument is, therefore, that if y_i is roughly proportional to the number of cooperative employees, then y_i is roughly proportional to P_i and y_i/P_i is more less constant, which implies that $V(\hat{Y})$ will be "small."

In the case of the non-cooperative employers, this measure of size was not usable. However, here the desire to appraise the extent to which the program could be expanded led to the choice of the number of employees in a firm as the controlling variable for the selection probabilities.

APPENDIX B

LONG FORM MAIL QUESTIONNAIRE
SHORT FORM MAIL QUESTIONNAIRE

APPENDIX B-1
LONG FORM MAIL QUESTIONNAIRE

Indiana University Bloomington, Indiana 47401

A STUDY ON THE IMPACT OF HIGH SCHOOL ON JOB EXPERIENCE AND CAREER DEVELOPMENT

A study being conducted by
Indiana University, Bloomington, Indiana
in cooperation with your high school

A. High School Experience

1. How many years of high school did you complete? ____ years

2. Did you graduate? YES ( ) Go to Q.4 NO ( ) Go to Q.3

3. Why did you leave school before graduation? ____________________

4. If you had the chance, would you take the same high school courses again? YES ( ) NO ( ) Go to Q.5

5. (If NO to Q.4) Why not? ____________________

6. What would you take instead? ____________________

7. Were you a participant in a high school cooperative vocational education program in Dayton? YES ( ) Go to Q.8 NO ( ) Go to Q.17.

8. (If YES to Q.7) How would you rank the co-op program on the following points:

	Very High	High	Average	Low	Not at All
9. Help in improving your own grades	(5)	(4)	(3)	(2)	(1)
10. Help in getting a better job	(5)	(4)	(3)	(2)	(1)
11. Effectiveness of teachers in the co-op program	(5)	(4)	(3)	(2)	(1)
12. Value of experience with equipment at school in handling first job after high school	(5)	(4)	(3)	(2)	(1)

13. Training received on the co-op work site	(5)	(4)	(3)	(2)	(1)
14. Made my academic subjects more interesting and meaningful	(5)	(4)	(3)	(2)	(1)
15. Enabled me to get a better job after graduation	(5)	(4)	(3)	(2)	(1)
16. Enabled me to get promoted faster in my current (or last) job	(5)	(4)	(3)	(2)	(1)

17. While in high school, did you ever participate in the Neighborhood Youth Corps? YES ( ) Go to Q.18 NO ( ) Go to Q. 19.

18. (If YES to Q.17) How many months did you participate? ______ months or check if less than one month ( ).

Did you ever apply to enter Patterson Co-op? YES ( ) NO ( )

B. Military Service Record

19. Are you presently (or have you ever been) a member of the armed forces? YES ( ) Go to Q.20 NO ( ) Go to Q.23.

20. (If YES to Q.19) Please answer the following:

21. When did you go on active duty? Month ___________ Year ____

22. When were you (or will you be) discharged? Month _________ Year _______.

C. Education and Training after High School

23. Did you continue your schooling after you left high school? YES ( ) Go to Q. 24 NO ( ) Go to Q.38.

24. (If YES to Q.23) Please check the type(s) of education or training which you have taken:

(a) Private business or trade school	( )	Go to Q. 25.
(b) Company training school	( )	Go to Q. 25.
(c) Correspondence course	( )	Go to Q. 25.
(d) Armed forces	( )	Go to Q. 25.
(e) Community or junior college	( )	Go to Q. 30.
(f) Four year college or university	( )	Go to Q. 30.
(g) Other (please specify)	( )	Go to Q. 25. ______

	1st Training Program	2nd Training Program
25. What skill or job did the program train you for?		
26. When did you start and leave the program?	Start: Mo___Yr___ Leave: Mo___Yr___	Start: Mo___Yr___ Leave: Mo___Yr___
27. Did you finish the program?	YES ( ) NO ( )	YES ( ) NO ( )
28. How many hours of training did you take altogether?	__________Hours	________Hours
29. How much, in direct cash outlay, did this cost you?	_________$ or None ( )	_______$ or None ( )

30. If you went to college, please indicate:

31. Did you go full time ( ), part time ( ), or both ( )?

32. How many semesters or quarters did you complete? ____________ semesters/qtrs. (circle one)

33. Did you earn a degree? YES ( ) Go to Q.34 NO ( ) Still attending ( ).

34. What degree was that? ______________________________

35. What was the total cost to you (or your parents) each semester or quarter? $ ___________ semester/qtr. (circle one)

36. Did you take courses to prepare you for a specific type of job? (e.g., nurse, electrical engineer) YES ( ) Go to Q.37 NO ( ) Go to Q.38.

37. (If YES to Q.36) What job was that? _________________________

D. Work Experience during High School

38. Did you hold a job for one month or longer while you were attending high school? YES ( ) NO ( ) Go to Q.45.

	Most Recent Job	Job before That	Job before That
39. What kind of work were you doing?	______	______	______
40. What kind of business or industry was this?	______	______	______
41. What month and year did you start and leave this job?	Start______ mo/yr Leave______ mo/yr	Start_____ mo/yr Leave_____ mo/yr	Start_____ mo/yr Leave_____ mo/yr
42. Was this job part of a cooperative vocational education program?	YES ( ) NO ( )	YES ( ) NO ( )	YES ( ) NO ( )
43. What was your final hourly wage rate (before deductions)? Please include any tips, commissions, etc., which you received.	Hourly Wage Rate ________ $	Hourly Wage Rate ________ $	Hourly Wage Rate ________ $
44. How many hours per week did you work on this job?	____hrs/wk	____hrs/wk	____hrs/wk

E. Work Experience after High School

45. Have you held a job for one month or longer at any time since you left high school? YES ( ) Go to Q.46 NO ( ) Go to Q.58. If YES, please answer in the columns below. If you held more than one job at the same time, just list them both in separate columns. Again, let us assure you that this is a statistical study and your answers will be held in the strictest confidence. Now, starting with the job you now have or your most recent job and working backward to the first job you had after leaving high school:

	Current or Most Recent Job	Job before That	Job before That
46. What kind of work are (were) you doing?	_______	______	______
47. What month and year did you start and leave this job?	Start_____ mo/yr Leave_____ mo/yr	Start_____ mo/yr Leave_____ mo/yr	Start_____ mo/yr Leave_____ mo/yr

	Current or Most Recent Job	Job before That	Job before That
48. How did you find out about this job?	______	______	______
49. What is (was) your pay (including tips and commissions) before taxes and deductions, now (or when you left this job)?	______$ hr/wk/mo (circle one)	______$ hr/wk/mo (circle one)	______$ hr/wk/mo (circle one)
50. How many hours per week do (did) you usually work?	___hrs.	___hrs.	___hrs.
51. What kind of business or industry is this?	______	______	______

F. Job Mobility and Relation of Training to Job

52. Again, have you ever held a job for one month or longer since leaving high school? YES ( ) Go to Q.53 NO ( ) Go to Q.58. If YES, for each job that you have held for one month or longer since you left high school, please answer the following questions:

	Current or Most Recent Job	Job before That	Job before That
53. Did the acceptance of this job require a change of residence?	YES ( ) NO ( )	YES ( ) NO ( )	YES ( ) NO ( )
54. If YES, to what city and state?	______ City ______ State	______ City ______ State	______ City ______ State
55. Is (was) this job related to the high school curriculum (vocational, academic, or general) which you took?	Highly Related( ) Somewhat Related( ) Unrelated ( )	Highly Related( ) Somewhat Related( ) Unrelated ( )	Highly Related( ) Somewhat Related( ) Unrelated ( )

	Current or Most Recent Job	Job before That	Job before That
56. On the whole, does this job fit in well with your overall job and career interests?	Fits in very well ( ) Fits in only moderately well ( ) Does not fit in at all ( )	Fits in very well ( ) Fits in only moderately well ( ) Does not fit in at all ( )	Fits in very well ( ) Fits in only moderately well ( ) Does not fit in at all ( )
57. Where have you learned the most about the skills of this particular job?	High sch. shop or classes( ) Apprentice Program( ) Formal on-the-job training( ) At work( ) Elsewhere ( ) Please Specify ________	High sch. shop or classes( ) Apprentice Program( ) Formal on-the-job training( ) At work( ) Elsewhere ( ) Please Specify ________	High sch. shop or classes( ) Apprentice Program( ) Formal on-the-job training( ) At work( ) Elsewhere ( ) Please Specify ________

G. Periods When You were Not Working

58. Since you left high school, are there any periods when you were not working or did not have a job? YES ( ) Go to Q.59. NO ( ) Go to Q.62.

	Current or Most Recent Period	Period before That	Period before That
59. When did this period of not working or not having a job begin and end?	Begin______ mo/yr End______ mo/yr	Begin______ mo/yr End______ mo/yr	Begin______ mo/yr End______ mo/yr

	Current or Most Recent Period		Period before That		Period before That	
60. What was the main reason why you were not working or did not have a job?	______		______		______	
61. What did you do during this period to find work?	Use	Did Not Use	Use	Did Not Use	Use	Did Not Use
(a) Nothing	( )	( )	( )	( )	( )	( )
(b) Answered want ads	( )	( )	( )	( )	( )	( )
(c) Applied to firms directly	( )	( )	( )	( )	( )	( )
(d) Checked with friends and relatives	( )	( )	( )	( )	( )	( )
(e) Checked with private employment agencies	( )	( )	( )	( )	( )	( )
(f) Checked with public employment agencies	( )	( )	( )	( )	( )	( )
(g) Unions	( )	( )	( )	( )	( )	( )
(h) Other (Specify)	( )	( )	( )	( )	( )	( )
	______		______		______	

H. Classification Data

62. When were you born? Month________ Year________

63. Sex: Male ( ) Female ( )

64. Ethnic Origin: White ( ) Black ( ) Other Ethnic Group ( )
Please specify ______________________________

65. Marital Status: Married( ) Single ( ) Separated, Widowed, or Divorced ( ).

66. (If married now or if you have ever been married) When were you married? __________Year.

67. How many dependents do you now have, not counting yourself?
None ( ) or __________ Go to Q.68.

68. If you have any dependents, please list the relationship each is to you and their age.

Age	Relationship
__________	______________________
__________	______________________

69. What was your father's main occupation for the majority of your elementary and high school years? ____________________

70. How many years of school did your father complete? _______ years. (Best guess, if you aren't sure)

71. How many people lived in your family during your senior (or last year) in high school? __________ persons.

72. Please estimate your family's total income during your senior (or last year) in high school. $____________

73. Are you currently registered to vote? YES ( ) NO ( )

74. (If NO to Q.73) Is it because you are ineligible to register ( ) or just have not registered at this time ( )?

I. Job Experiences and Attitudes

75. Again, have you ever held a job for one month or longer since leaving high school? YES ( ) Go to Q.76 NO ( ) Go to Q.83.

76. Compared to the wage rate you now earn (or earned on the last job you had) what is the absolute minimum you would be willing to take on a similar job at this time?

Wage rate now, or last job _________________________
hour/wk./mo.
(please circle one)

Absolute minimum acceptable at this time _______________________
hour/wk./mo.
(Please circle one)

77. Please think back on the last time you looked for a job.

78. What was the type of job you were looking for? _______________

79. Before you applied for or were interviewed for that job, would you say you were:
( ) Very sure of yourself
( ) Fairly sure of yourself
( ) A little unsure of yourself
( ) Very unsure of yourself

80. After you applied for or were interviewed for that job, did you worry much about the results?
( ) Not at all
( ) Just a bit
( ) A fair amount
( ) A great deal

81. Did you get that particular job? YES ( ) NO ( )

82. Have you ever tried to get a job that was a lot different from the usual type of work you do? YES ( ) NO ( )

The questions below concern your opinion about the experiences you may have had when looking for work and also ask your opinion concerning the best way to get ahead on a job. Please check the choice which describes your opinion the best.

	Strongly Agree	Agree	Disagree	Strongly Disagree
83. "In his work, all a person should want is a secure, not-too-difficult job with enough pay for a nice car and home."	( )	( )	( )	( )
84. " The wise person lives for today and lets tomorrow take care of itself."	( )	( )	( )	( )
85. "It is best to have a job as part of an organization all working together, even if you do not get individual credit."	( )	( )	( )	( )
86. "Do not expect too much out of life and be content with what comes your way."	( )	( )	( )	( )
87. "Planning only makes a person unhappy since your plans hardly ever work out anyway."	( )	( )	( )	( )

Thank you for your time and consideration. The confidentiality of your answers will be respected.

Note: Questions 77 through 87 are based on a similar set of questions in Harold L. Sheppard and A. Harvey Belitsky, The Job Hunt, (Baltimore: The John Hopkins University Press, 1966).

APPENDIX B-2
SHORT FORM MAIL QUESTIONNAIRE

Indiana University   Bloomington, Indiana   47401

A STUDY ON THE IMPACT OF HIGH SCHOOL ON JOB EXPERIENCE AND CAREER DEVELOPMENT

A study being conducted by
Indiana University, Bloomington, Indiana
in cooperation with your high school

A. Education

1. How many years of high school did you complete? ___ years

2. Did you graduate? YES ( ) NO ( )

3. Did you ever apply to enter Patterson Co-op? YES ( ) NO ( )

4. Were you a participant in a high school cooperative vocational education program in Dayton? YES ( ) NO ( )

5. Did you continue your schooling after you left high school? YES ( ) NO ( )

6. (IF YES to Q.5) Please check the type(s) of education or training which you have taken:

   (a) Private business or trade school ( )
   (b) Company training school ( )
   (c) Correspondence course ( )
   (d) Armed forces ( )
   (e) Community or junior college ( )
   (f) Four-year college or university ( )
   (g) Other (please specify) ( ) ________________

7. If you went to college, please indicate how many semesters or quarters you completed. _____ semesters/quarters (circle one)

8. Did you earn a degree? YES ( ) NO ( ) Still attending ( )

B. Work Experience During High School

9. Did you hold a job for one month or longer while you were attending high school? YES ( ) NO ( )

10. What kind of work were you doing? ______________________

11. What kind of business or industry was this? ______________

12. What month and year did you start and leave this job?
Start ________ Leave ________
mo/yr mo/yr

13. Was this job part of a cooperative vocational education program?
YES ( ) NO ( )

14. What was your final hourly wage rate (before deductions)? Please include any tips, commissions, etc., which you received.
$_____ hourly wage rate

15. How many hours per week did you work on this job? _____hrs/week

C. Work Experience after High School

16. Have you held a job for one month or longer at any time since you left high school? YES ( ) NO ( )

IF YES, could you tell us about the longest job you held after high school as well as the current or most recent job you held? Again, let us assure you that this is a statistical study and your answers will be held in the strictest confidence.

	Current or Most Recent Job	Longest Job Held
17. What kind of work are (were) you doing?	____________	____________
18. What month and year did you start and leave this job?	Start________ mo/yr Leave________ mo/yr	Start________ mo/yr Leave________ mo/yr
19. How did you find out about this job?	____________	____________
20. What is (was) your pay (including tips and commission) before taxes and deductions, now (or when you left this job)?	$__________ hr/wk/mo (circle one)	$__________ hr/wk/mo (circle one)

21. How many hours per week do (did) you usually work? ________hrs. ________hrs.

22. What kind of business or industry is this? ________ ________

D. Periods When You Were Not Working

23. Since you left high school, are there any periods when you were not working or did not have a job? YES ( ) NO ( )

24. How many times have you been without a job since leaving high school? _____

25. How many months since leaving high school have you been without a job and looking for work? _____ months

26. Could you tell us about your current or most recent period when you were not working?

Current or
Most Recent Period

27. When did this period of not working or not having a job begin and end?

Begin________
mo/yr

End________
mo/yr

28. What was the main reason why you were not working or did not have a job? ________

29. What did you do during this period to find work? Check the items that apply.

(a) Nothing ( )
(b) Answered want ads ( )
(c) Applied to firms directly ( )
(d) Checked with friends and relatives ( )
(e) Checked with private employment agencies ( )
(f) Checked with public employment office ( )
(g) Unions ( )
(h) Other (specify) ( ) ________

E. Classification Data

30. When were you born? Month _____ Year _____

31. Sex: Male ( ) Female ( )

32. Ethnic Origin: White ( ) Black ( ) Other Ethnic Group ( )
Please specify__________

33. Marital Status: Married ( ) Single ( ) Separated, Widowed or Divorced ( )

34. How many dependents do you now have, not counting yourself?
None ( ) or _____

35. What was your father's main occupation for the majority of your elementary and high school years? ____________________

36. How many years of school did your father complete? _____
(Best guess if not sure)

37. How many people lived in your family during your senior (or last) year in high school? _____ persons

38. Please estimate your family's total income during your senior (or last) year in high school. $_____

Thank you for your time and consideration. The confidentiality of your answers will be respected.

APPENDIX C

EMPLOYER QUESTIONNAIRE

APPENDIX C
EMPLOYER QUESTIONNAIRE

Indiana University Bloomington, Indiana 47401

A STUDY ON THE IMPACT OF HIGH SCHOOL ON JOB EXPERIENCE AND CAREER DEVELOPMENT

A study being conducted by
Indiana University, Bloomington, Indiana
in cooperation with your high school

Name of Firm ______________________ Date __________

Name of Person Responding ____________________

Official Title of Respondent ____________________

A. Background Information

1. What is your type of business? That is, what activity at your Dayton area location yields the most employment for your firm?
____

2. How long has your firm been located in Dayton? ______ years

3. Is the main market for your firm's products ( ) local (i.e., entirely within Ohio) ( ) regional (Midwest only, South only, etc.) ( ) national or ( ) international (includes Canada or Mexico) ?

4. Could you estimate the total number of salaried workers your firm presently employs? ______

5. Could you estimate the total number of production workers your firm presently employs? ______

6. Do you expect your total salaried worker employment to ( ) increase, ( ) decrease or ( ) stay the same within the next 12 months?

7. Do you estimate your total production worker employment to ( ) increase, ( ) decrease or ( ) stay the same within the next 12 months?

8. What is the total number of your employees who are aged 16 or 17? ____________

9. What is the total number of your employees who are aged 18, 19, 20 or 21? ______________

10. Did the number of employees in your firm aged 16 and 17 ( ) increase, ( ) decrease or ( ) stay the same in 1971?

11. (If you checked increase or decrease in Q.10) By how many? ___________ workers

12. Did the number of employees in your firm aged 18 to 21 ( ) increase, ( ) decrease or ( ) stay the same in 1971?

13. (If you checked increase or decrease in Q.12) By how many? _________ workers

14. Do you expect the number of persons your firm hires who are aged 16 to 17 to ( ) increase ( ) decrease or ( ) stay the same during the next 5 years?

15. (If you checked increase or decrease in Q.14) By how many? __________ workers

16. Do you expect the number of persons your firm hires who are aged 18 to 21 to ( ) increase, ( ) decrease or ( ) stay the same during the next 5 years?

17. (If you checked increase or decrease in Q.16) By how many? ___________ workers

B. Hiring Procedures

18. Does your firm have a set of standards or guidelines to be used regarding the employment of new hires? ( ) Yes (Please go to Q.19) ( ) No (Please go to Q.22)

19. Does this same set of standards apply to every entry level job in the firm or does it vary from job to job? ( ) every job (Please go to Q.20) ( ) varies from job to job (Please go to Q.22)

20. (If standards are the same for every entry level job) Please give the minimum standards you have in each of the following categories:

(a) Age in years ________ or ( ) does not apply.
(b) Education in years _______ or ( ) does not apply.

(c) Experience in years _______ or ( ) does not apply.
(d) Apprenticeship in years _______ or ( ) does not apply.
(e) Specific formal vocational training _______ or ( ) does not apply.
(f) Score on a company administered test _______ or ( ) does not apply.
(g) No physical or mental disability (e.g., blind, harelip, crippled, outpatient of mental health clinic) ( ) (Please go to Q.21) or ( ) does not apply.

21. (If there are restrictions on physical or mental disability) Please specify these restrictions. _______

22. What are your main recruiting channels? Please rank in descending order of importance. 1 = most important, 8 = least important.

(a) School placement officers _______
(b) Private employment agencies _______
(c) Public employment service _______
(d) Union hall _______
(e) Walk-ins from the street _______
(f) Newspaper ads _______
(g) Friends and relatives of current employees _______
(h) Other. Please specify. _______

C. The Cooperative Vocational Education Program in Dayton

23. Have you ever heard of the Patterson High School cooperative vocational education program? ( ) Yes (Please go to Q.24) ( ) No (Please go to Q.56)

24. (If Yes to Q.23) Does your firm participate in the program now, or has it participated in the past? ( ) current participant (Please go to Q.25) ( ) past participant (Please go to Q.55) ( ) never participated (Please go to Q.56).

25. (If your firm is a current participant) How many co-op students currently work in your firm? _______

26. How do you select your co-op student employees?
( ) Accept any recommended by school without restrictions.
( ) Specify prerequisites with respect to age, sex, personality characteristics or other criteria.
Please specify each criterion:
(a) _______ (b) _______ (c) _______ (d) _______

27. Does your firm have any special provisions with respect to hiring co-op students who are members of a minority group? ( ) Yes ( ) No

28. (If Yes to Q.27) Could you please specify what these provisions are? ____________________

29. Would you employ co-op students with less than average skills (say, 8th grade level) in reading, writing, arithmetic or ability to speak clearly and grammatically? ( ) Yes ( ) No

30. (If Yes to Q.29) Could you please indicate the type of jobs that would be offered?
(a) ____________ (b) ____________
(c) ____________ (d) ____________

31. Patterson High School is enrolling students from a wider range of Dayton students than in the past. Has this affected your hiring policies with respect to co-op students? ( ) Yes ( ) No

32. (If Yes to Q. 31) Could you please specify the way in which your hiring policies of co-op students have been affected? ____________________

33. What is the usual starting rate for co-op students? ________ hourly or ________ weekly

34. Is this the same starting rate paid to other beginners? ( ) Yes ( ) No

35. (If No to Q.34) What is the hourly or weekly rate paid to other beginners in the same job slot(s) co-op workers fill? ________ hourly or ________ weekly

36. Are co-op students eligible for full coverage of fringe benefits? ( ) Yes ( ) No

37. Does a co-op student earn time towards seniority in his job? ( ) Yes ( ) No

38. If you have a union shop, are co-op members required to pay dues? ( ) Yes ( ) No

39. Do co-op students qualify for promotion to more skilled jobs in your firm? ( ) Yes ( )No Please list the job titles for the job slots in your firm which are most commonly available to co-op students:
(a) ____________ (b) ____________ (c) ____________
(d) ____________ (e) ____________ (f) ____________

40. Do trade union rules limit the degree to which co-op students have access to different jobs in your plant? ( ) Yes (Please go to Q.41) ( ) No ( ) does not apply, no union

41. (If Yes to Q.40) What jobs exist in your plant which could be performed by co-op students but which trade union rules prohibit them from doing?
(a) ______________ (b) ______________ (c) ______________
(d) ______________ (e) ______________ (f) ______________

42. What jobs exist in your plant which could be performed by co-op students but which the state or federal child labor laws, Fair Labor Standards Act or other legislation prohibits them doing? Please list:
(a) ______________ (b) ______________ (c) ______________
(d) ______________ (e) ______________ (f) ______________

43. What factors determine the number of co-op students in your firm?
( ) Number of students referred by the high school counselors.
( ) Fixed ratio of co-op students to total employees.
( ) Fixed number of co-op students.
( ) Number of unfilled vacancies.
( ) Number of trainees desired as potential permanent employees.
( ) Other. Please specify. ______________________________

44. As presently operated, the program allows the co-op student to alternate at two-week intervals between full-time work and full-time school. Is this arrangement optimal for the production requirements of your firm? ( ) Yes (Please go to Q.46) ( ) No (Please go to Q.45)

45. (If No to Q. 44) What would be a more desirable time pattern of work and schooling? Please specify ______________________

46. If the co-op program were stopped tomorrow, how many full-time workers would you hire as replacements? __________

47. Does the co-op student receive any additional formal training from the firm while he is on the job? ( ) Yes (Please go to Q.48) ( ) No

48. (If Yes to Q. 47) Please specify the type of training received:
____

49. How much direct out-of-pocket training costs does your firm incur for each co-op student it hires? $ _______/co-op student or ( ) none

50. Even if your firm incurs no direct out-of-pocket costs in training the typical co-op student, it may experience other costs, such as supervisory time devoted to orienting newly hired co-op students. Could you estimate the total dollar value per co-op student of these types of costs? $________/co-op student or ( ) None

51. In what way, if any, has the recent economic downturn affected your ability to participate in the co-op program? Please specify. ________________________________

52. If the recent economic downturn has forced your firm to cut back on the number of co-op students you could hire, could you please estimate the total number of co-op students cut back? ______ students

53. In your opinion, what are the most desirable aspects of the co-op program? Please specify. (a)________________________
(b)______________________ (c)________________________

54. In your opinion, what are the least desirable aspects of the co-op program? Please specify. (a)________________________
(b)______________________ (c)________________________

55. (If your firm was a past participant in the co-op program) Why is it that your firm no longer participates in the co-op program? Please specify ________________________________

56. (If your firm was never a participant in the co-op program) Why is it that your firm was never a participant in the co-op program?
(a) Have never been asked ______
(b) Cannot accommodate part-time employees ______
(c) Prefer not to hire the very young and inexperienced ______
(d) Legal restrictions placed on hiring youth ______
(e) Type of work requires more training than could be given in a high school program ______
(f) Other. Please specify ________________________ ______

57. (If your firm is not now a member of the co-op program) Under what conditions would your firm join the co-op program? Please specify ________________________________

Thank you for your time and help. Again, let us reaffirm that your answers are strictly confidential.

APPENDIX D

SUPPLEMENTARY TABLES

APPENDIX TABLE D-1
PERCENT OF TOTAL STUDY SAMPLE RESPONDENTS WHO RESPONDED TO MAIL QUESTIONNAIRE

		Cooperative	Non-cooperative
Total Sample	%	86.7	96.8
	n	360	1057
Males	%	84.5	92.5
	n	161	455
Females	%	88.4	98.1
	n	199	565
Whites	%	86.8	97.1
	n	333	790
Blacks & Others	%	88.5	95.6
	n	26	252
White Males	%	85.1	95.9
	n	148	394
Black & Other Males	%	83.3	92.1
	n	12	89
White Females	%	88.1	98.2
	n	185	396
Black & Other Females	%	92.9	97.5
	n	14	163
1966 Cohort	%	82.3	93.9
	n	192	461
1970 Cohort	%	91.7	99.0
	n	168	596

Notes: n = base of total population in each cell. Thus, for the total cooperative sample of 360, 86.7% or 312 responded to the mail questionnaire.

APPENDIX TABLE D-2

PERCENT OF STUDY SAMPLE WHITE OR BLACK OR OTHER

	Cooperative			Non-cooperative		
	% White	n	% Black & Other	% White	n	% Black & Other
Total Sample	92.8	359	7.2	75.9	1043	24.1
Males	92.5	160	7.5	80.1	492	18.1
Females	93.0	199	7.0	71.1	560	28.9
Whites	100.0	333	0.0	100.0	790	0.0
Blacks & Others	0.0	26	100.0	0.0	252	100.0
White Males	100.0	148	0.0	100.0	394	0.0
Black & Other Males	0.0	12	100.0	0.0	89	100.0
White Females	100.0	185	0.0	100.0	396	0.0
Black & Other Females	0.0	14	100.0	0.0	163	100.0
1966 Cohort	97.4	192	2.6	79.9	457	20.1
1970 Cohort	87.4	167	12.6	72.9	586	27.1

Note: n is the number upon which the percentage is based.

APPENDIX TABLE D-3

PERCENT OF STUDY SAMPLE MALE AND FEMALE

	Cooperative			Non-cooperative		
	% Male	n	% Female	% Male	n	% Female
Total Sample	44.7	360	55.3	46.5	1057	53.5
Males	100.0	161	0.0	100.0	492	0.0
Females	0	199	100.0	0	565	100.0
Whites	44.4	333	55.6	49.9	790	50.1
Blacks and Others	46.2	26	53.8	35.3	252	64.7
White Males	100.0	148	0.0	100.0	394	0.0
Black and Other Males	100.0	12	0.0	100.0	89	0.0
White Females	0.0	185	100.0	0.0	396	100.0
Black and Other Females	0.0	14	100.0	0.0	163	100.0
1966 Cohort	45.8	192	54.2	52.7	461	47.3
1970 Cohort	43.5	168	56.5	41.8	596	58.2

Note: n is the number upon which the percentage is based.

APPENDIX TABLE D-4
PERCENT MALE-FEMALE IN SELECTED BREAKDOWNS OF STUDY SAMPLE

	Cooperative			Non-cooperative		
	% Male	n	% Female	% Male	n	% Female
1966 Cohort White	46.0	187	54.0	55.1	365	44.9
1966 Cohort Black	40.0	5	60.0	42.6	61	57.4
1970 Cohort White	40.9	115	59.1	43.6	322	56.5
1970 Cohort Black	47.6	21	52.4	31.2	160	68.8
1966 Cohort Males	100.0	88	0.0	100.0	243	0.0
1966 Cohort Females	0.0	104	100.0	0.0	218	100.0
1970 Cohort Males	100.0	73	0.0	0.0	249	100.0
1970 Cohort Females	0.0	95	100.0	0.0	347	100.0
Never Been to College	37.7	228	62.3	42.4	531	57.6
Have Been to College	55.5	128	44.5	50.2	504	49.8
No Post-High School Education	47.7	44	52.3	61.7	47	38.3
Some Non-college Post High School Education	52.9	51	47.1	50.8	124	49.2
High School Graduates only	45.0	331	55.0	46.6	887	53.4
IQ Less than 100	46.0	50	54.0	44.0	216	56.0

Notes: The reported n is the cell size upon which the percentages are based.

APPENDIX TABLE D-5
PERCENT WHITE-BLACK AND OTHER IN SELECTED BREAKDOWNS OF STUDY SAMPLE

	Cooperative			Non-cooperative		
	% White	n	% Black & Other	% White	n	% Black & Other
1966 Cohort White	100.0	187	0.0	100.0	365	0.0
1966 Cohort Black	0.0	5	100.0	0.0	61	100.0
1970 Cohort White	100.0	115	0.0	100.0	322	0.0
1970 Cohort Black	0.0	21	100.0	0.0	160	100.0
1966 Cohort Males	97.7	88	2.3	83.7	240	16.3
1966 Cohort Females	97.1	104	2.9	75.6	217	24.4
1970 Cohort Males	86.1	72	13.9	79.4	243	20.6
1970 Cohort Females	88.4	95	11.6	68.2	343	31.8
Never Been to College	94.7	227	5.3	74.2	523	25.8
Have Been to College	89.8	128	10.2	77.8	499	22.2
No Post-High School Education	97.7	43	2.3	76.6	47	23.4
Some Non-college Post High School Education	96.1	51	3.9	75.4	122	24.6
High School Graduates only	92.4	331	7.6	75.4	887	24.6
IQ Less than 100	90.0	50	10.0	57.6	210	42.4

Notes: The reported n is the cell size upon which the percentages are based.

APPENDIX TABLE D-6

SEX-ETHNIC CHARACTERISTICS OF COMBINED LONG AND SHORT-FORM MAIL QUESTIONNAIRE SAMPLE[a]

	Cooperative			Non-Cooperative		
	Male	Female	Column Total	Male	Female	Column Total
Blacks & Others	43.3 7.5 13	56.7 7.8 17	7.7 30	37.9 20.1 111	62.1 29.6 182	25.1 293
Whites	44.6 92.5 161	55.4 92.2 200	92.3 361	50.6 79.9 442	49.4 70.2 432	74.8 874
Not Ascertained	---	---	---	0.0 0.0 0	100.0 0.2 1	0.1 1

Note: [a] The numbers in each cell are the row percentage, the column percentage and the cell size.

APPENDIX TABLE D-7
SOCIO-ECONOMIC STATUS OF FATHER'S OCCUPATION WHILE ATTENDING HIGH SCHOOL, STUDY SAMPLE USED IN REGRESSION ANALYSIS

		Cooperative	Non-cooperative
1966 Cohort White	m	36.2	44.5
	sd	(19.4)	(23.3)
	m	175	336
1966 Cohort Black	m	16.0	25.7
	sd	(6.9)	(19.1)
	n	5	61
1970 Cohort White	m	35.9	44.6
	sd	(20.1)	(24.1)
	n	115	322
1970 Cohort Black	m	19.1	24.7
	sd	(12.8)	(16.4)
	n	19	117
1966 Cohort Males	m	33.5	41.6
	sd	(19.1)	(24.0)
	n	84	221
1966 Cohort Females	m	37.5	39.7
	sd	(19.7)	(23.5)
	n	96	194
1970 Cohort Males	m	36.4	42.9
	sd	(22.6)	(24.1)
	n	68	218
1970 Cohort Females	m	33.2	38.1
	sd	(17.5)	(23.6)
	n	87	293
Never Been to College	m	35.1	31.7
	sd	(19.7)	(20.1)
	n	212	456
Have Been to College	m	34.7	48.7
	sd	(18.7)	(24.3)
	n	119	453

APPENDIX TABLE D-7

Socio-economic Status of Father's Occupation while Attending High School, Study Sample used in Regression Analysis (continued)

		Cooperative	Non-cooperative
No Post-High School Education	m	35.6	35.0
	sd	(19.4)	(22.9)
	n	43	44
Some Non-college Post High School Education	m	37.7	35.1
	sd	(20.6)	(22.2)
	n	50	104
High School Graduates only	m	35.5	41.9
	sd	(19.6)	(23.0)
	n	307	789
California Mental Maturity IQ Less than 100	m	33.0	28.7
	sd	(20.2)	(19.3)
	n	46	180

Notes: m = cell mean
sd = cell standard deviation
n = cell size

APPENDIX TABLE D-8
ACADEMIC AND VOCATIONAL CREDITS, STUDY SAMPLE USED IN REGRESSION ANALYSIS

		Academic Credits		Vocational Credits	
		Cooperative	Non-cooperative	Cooperative	Non-cooperative
1966 Cohort White	m	11.03	11.96	5.40	2.63
	sd	(3.35)	(3.70)	(2.54)	(2.13)
	n	187	364	187	364
1966 Cohort Black	m	10.70	11.65	3.95	2.57
	sd	(4.44)	(3.34)	(2.86)	(1.72)
	n	5	61	5	61
1970 Cohort White	m	11.00	12.03	7.61	2.21
	sd	(2.50)	(4.03)	(2.08)	(1.85)
	n	115	322	115	322
1970 Cohort Black	m	10.55	10.53	7.23	2.80
	sd	(2.48)	(3.12)	(1.88)	(2.05)
	n	20	160	20	160
1966 Cohort Males	m	10.90	12.12	4.96	2.59
	sd	(3.08)	(3.72)	(1.89)	(2.08)
	n	88	242	88	242
1966 Cohort Females	m	11.13	11.57	5.70	2.56
	sd	(3.61)	(3.58)	(2.97)	(2.06)
	n	104	218	104	218
1970 Cohort Males	m	11.33	11.57	6.69	2.57
	sd	(2.90)	(4.16)	(1.73)	(1.94)
	n	72	249	72	249

APPENDIX TABLE D-8
Academic and Vocational Credits, Study Sample Used in Regression Analysis (continued)

		Academic Credits		Vocational Credits	
		Cooperative	Non-cooperative	Cooperative	Non-cooperative
1970 Cohort Females	m	10.55	11.12	8.22	2.28
	sd	(2.11)	(3.65)	(2.08)	(1.56)
	n	95	347	95	347
Never Been to College	m	10.25	9.37	6.75	2.91
	sd	(2.88)	(3.13)	(2.74)	(2.08)
	n	288	530	228	530
Have Been to College	m	12.17	13.77	5.75	2.03
	sd	(2.80)	(3.05)	(2.16)	(1.76)
	n	127	504	127	504
No Post High School Education	m	10.18	10.14	5.96	2.79
	sd	(3.39)	(3.52)	(3.39)	(2.08)
	n	44	47	44	47
Some Non-college Post High School Education	m	12.60	10.77	5.17	2.96
	sd	(2.44)	(3.09)	(2.07)	(2.05)
	n	50	124	50	124
High School Graduates only	m	11.41	12.51	6.70	2.69
	sd	(2.58)	(3.06)	(2.40)	(2.01)
	n	330	887	330	887
IQ Less than 100	m	9.22	9.70	6.42	2.97
	sd	(2.64)	(2.80)	(2.83)	(2.07)
	n	50	215	50	215

Notes: m = cell mean; sd = cell standard deviation; n = cell size.

APPENDIX TABLE D-9
SELECTED GRADE POINT AVERAGES, STUDY SAMPLE USED IN REGRESSION ANALYSIS

		Freshman Grade Point Average		Cumulative Grade Point Average		Change in Grade Point Average, Freshman vs. Senior or Last Year in High School	
		Cooperative	Non-cooperative	Cooperative	Non-cooperative	Cooperative	Non-cooperative
1966 Cohort White	m	2.49	2.41	2.41	2.42	-0.09	0.14
	sd	(0.66)	(0.87)	(0.52)	(0.77)	(0.65)	(0.68)
	n	187	365	187	365	187	365
1966 Cohort Black	m	2.46	2.39	2.17	2.42	-0.45	0.20
	sd	(0.54)	(0.62)	(0.24)	(0.63)	(0.93)	(0.56)
	n	5	61	5	61	5	61
1970 Cohort White	m	2.60	2.43	2.57	2.46	0.05	0.15
	sd	(0.60)	(0.81)	(0.52)	(0.74)	(0.60)	(0.67)
	n	115	322	115	322	155	322
1970 Cohort Black	m	2.77	2.06	2.29	2.06	-0.45	0.12
	sd	(0.65)	(0.73)	(0.43)	(0.63)	(0.78)	(0.76)
	n	21	160	20	160	20	160
1966 Cohort Males	m	2.23	2.24	2.21	2.26	-0.04	0.14
	sd	(0.63)	(0.85)	(0.48)	(0.75)	(0.67)	(0.68)
	n	88	243	99	243	88	243
1966 Cohort Females	m	2.71	2.55	2.57	2.58	-0.14	0.16
	sd	(0.60)	(0.80)	(0.48)	(0.73)	(0.65)	(0.63)
	n	104	218	104	218	104	218

APPENDIX TABLE D-9

Selected Grade Point Averages, Study Sample Used in Regression Analysis (continued)

		Freshman Grade Point Average		Cumulative Grade Point Average		Change in Grade Point Average, Freshman vs. Senior or Last Year in High School	
		Coop-erative	Non-coop-erative	Coop-erative	Non-coop erative	Coop-erative	Non-coop-erative
1970 Cohort Males	m	2.45	2.16	2.43	2.16	0.04	0.11
	sd	(0.64)	(0.84)	(0.51)	(0.74)	(0.71)	(0.73)
	n	73	249	72	249	72	249
1970 Cohort Females	m	2.74	2.38	2.63	2.40	-0.01	0.15
	sd	(0.56)	(0.79)	(0.48)	(0.74)	(0.65)	(0.69)
	n	95	347	95	347	95	347
Never Been to College	m	2.53	1.97	2.42	1.97	-0.08	0.13
	sd	(0.61)	(0.74)	(0.47)	(0.66)	(0.68)	(0.76)
	n	228	531	228	531	228	531
Have Been to College	m	2.56	2.70	2.55	2.73	0.03	0.15
	sd	(0.68)	(0.74)	(0.56)	(0.65)	(0.65)	(0.59)
	n	128	504	127	504	127	504
No Post-High School Education	m	2.43	2.07	2.28	2.13	-0.14	0.22
	sd	(0.68)	(0.76)	(0.61)	(0.74)	(0.84)	(0.62)
	n	44	47	44	47	44	47
Some Non-college Post High School Education	m	2.49	2.18	2.44	2.15	-0.01	0.13
	sd	(0.62)	(0.66)	(0.45)	(0.60)	(0.67)	(0.68)
	n	51	124	50	124	51	124

APPENDIX TABLE D-9

Selected Grade Point Averages, Study Sample Used in Regression Analysis (continued)

		Freshman Grade Point Average		Cumulative Grade Point Average		Change in Grade Point Average, Freshman vs. Senior or Last Year in High School	
		Coop-erative	Non-coop-erative	Coop-erative	Non-coop-erative	Coop-erative	Non-coop-erative
High School Graduates only	m	2.57	2.43	2.50	2.47	-0.03	0.19
	sd	(0.64)	(0.78)	(0.51)	(0.68)	(0.66)	(0.67)
	n	330	887	330	887	330	887
IQ Less than 100	m	2.47	1.94	2.24	1.94	-0.21	0.14
	sd	(0.53)	(0.59)	(0.42)	(0.54)	(0.63)	(0.67)
	n	50	216	50	216	50	216

Notes: m = cell mean
sd = cell standard deviation
n = cell size

APPENDIX TABLE D-10

GRADE POINT AVERAGES BROKEN DOWN BY EXPECTED YEAR OF GRADUATION, PERSONAL FOLLOW-UP SAMPLES, MAIL RESPONDENTS, AND NON-RESPONDENTS[a/]

		Cooperative			Non-cooperative		
		Personal Follow-up	Mail Respondents	No Response	Personal Follow-up	Mail Respondents	No Response
Freshman Year:							
1966 Cohort	m	2.30	2.56	2.45	2.09	2.40	1.92
	sd	(0.66)	(0.65)	(0.65)	(0.85)	(0.83)	(0.79)
	n	41	157	262	33	460	1546
1970 Cohort	m	2.41	2.63	2.46	2.27	2.26	1.90
	sd	(0.51)	(0.63)	(0.64)	(0.74)	(0.82)	(0.79)
	n	16	169	166	16	655	1272
Senior Year:							
1966 Cohort	m	2.26	2.44	2.18	2.20	2.55	1.94
	sd	(0.56)	(0.62)	(0.58)	(0.85)	(0.81)	(0.84)
	n	41	157	262	33	460	1540
1970 Cohort	m	2.60	2.64	2.35	2.37	2.39	1.92
	sd	(0.65)	(0.58)	(0.60)	(0.85)	(0.88)	(0.88)
	n	15	169	166	16	655	1268
Cumulative:							
1966 Cohort	m	2.26	2.45	2.24	2.10	2.42	1.90
	sd	(0.42)	(0.53)	(0.49)	(0.77)	(0.75)	(0.74)
	n	41	157	262	33	460	1546
1970 Cohort	m	2.36	2.56	2.31	2.31	2.28	1.88
	sd	(0.35)	(0.52)	(0.48)	(0.85)	(0.76)	(0.73)
	n	15	169	166	16	655	1271

Notes: a/ m = cell mean; sd = cell standard deviation; n = cell size.

APPENDIX TABLE D-11

GRADUATION STATUS AND POST-SECONDARY EDUCATION STATUS BY SEX, FOR COMBINED LONG AND SHORT-FORM MAIL QUESTIONNAIRE SAMPLES[a/]

	Cooperative			Non-cooperative		
	Male	Female	Column Total	Male	Female	Column Total
Graduated	174	215	389	512	558	1070
	44.7	55.3	100.0	47.9	52.1	100.0
	98.9	99.1	99.0	90.9	89.9	90.4
Did Not Graduate	2	2	4	41	54	95
	50.0	50.0	100.0	43.2	56.8	100.0
	1.1	0.9	1.0	7.3	8.7	8.0
Not Ascertained	---	---	---	10	9	19
				52.6	47.4	100.0
				1.8	1.4	1.6
No Post-Secondary Education	58	104	162	158	225	383
	35.8	64.2	100.0	41.3	58.7	100.0
	33.1	47.9	41.3	28.1	36.3	32.4
Post-Secondary Education	112	102	214	373	366	739
	52.3	47.7	100.0	50.5	49.5	100.0
	64.0	47.0	54.6	66.3	59.0	62.5
Not Ascertained	5	11	16	32	29	61
	31.3	68.8	100.0	52.5	47.5	100.0
	2.9	5.1	4.1	5.7	4.7	5.2

Note: a/ The numbers in each cell are the cell size, the row percentage and the column percentage.

APPENDIX TABLE D-12

GRADUATION STATUS AND POST-SECONDARY EDUCATION STATUS BY ETHNIC ORIGIN, FOR COMBINED LONG AND SHORT-FORM MAIL QUESTIONNAIRE SAMPLE [a/]

	Cooperative			Non-cooperative			
	Black & Other	White	Column Total	Black & Other	White	Not ascertained	Column Total
Graduated	29 7.5 96.7	358 92.5 99.2	387 100.0 99.0	261 24.7 89.1	794 75.2 90.8	1 0.1 100.0	1056 100.0 90.4
Did Not Graduate	1 25.0 3.3	3 75.0 0.8	4 100.0 1.0	24 25.8 8.2	69 74.2 7.9	0 0.0 0.0	93 100.0 8.0
Not Ascertained	---	---	---	8 42.1 2.7	11 57.9 1.3	0 0.0 0.0	19 100.0 1.6
No Post-Secondary Education	8 5.0 26.7	153 95.0 42.5	161 100.0 41.3	94 24.9 32.1	284 75.1 32.5	0 0.0 0.0	378 100.0 32.4
Post-Secondary Education	22 10.3 73.3	191 89.7 53.1	213 100.0 54.6	181 24.9 61.8	547 75.0 62.7	1 0.1 100.0	729 100.0 62.5
Not Ascertained	0 0.0 0.0	16 100.0 4.4	16 100.0 4.1	18 30.0 6.1	42 70.0 4.8	0 0.0 0.0	60 100.0 5.1

Note: a/ The numbers in each cell are the cell size, the row percentage and the column percentage.

APPENDIX TABLE D-13

GRADUATION STATUS AND POST-SECONDARY EDUCATION STATUS, STUDY SAMPLE USED IN REGRESSION ANALYSIS

		Graduated		Acquired Post-secondary Education	
		Cooperative	Non-cooperative	Cooperative	Non-cooperative
1966 Cohort White	%	98.9	94.0	62.6	72.6
	n	187	365	187	365
1966 Cohort Black	%	80.0	93.2	60.0	77.0
	n	5	61	5	61
1970 Cohort White	%	96.5	85.7	43.5	60.2
	n	115	322	115	322
1970 Cohort Black	%	95.2	88.1	71.4	58.1
	n	21	160	21	160
1966 Cohort Males	%	100.0	94.7	70.5	79.4
	n	88	243	88	243
1966 Cohort Females	%	98.1	93.6	55.8	65.1
	n	104	218	104	218
1970 Cohort Males	%	97.3	88.8	55.6	75.4
	n	73	249	72	249
1970 Cohort Females	%	100.0	88.5	38.9	56.9
	n	95	347	95	346
Never Been to College	%	98.2	82.7	29.1	29.1
	n	228	531	227	530

APPENDIX TABLE D-13
Graduation Status and Post-secondary Education
Status, Study Sample Used in Regression Analysis (continued)

		Graduated		Acquired Post-secondary Education	
		Cooperative	Non-cooperative	Cooperative	Non-cooperative
Have Been to College	%	100.0	99.4	99.2	99.0
	n	128	504	128	504
No Post-High School Education	%	100.0	87.2	29.5	34.8
	n	44	47	44	46
Some Non-college Post High School Education	%	100.0	92.7	100.0	100.0
	n	51	124	51	124
High School Graduates only	%	100.0	100.0	55.8	68.8
	n	331	887	331	887
IQ Less than 100	%	98.0	87.0	40.0	50.2
	n	50	216	50	215

Notes: n = Total cell size on which percentage is based.

APPENDIX TABLE D-14
EDUCATIONAL EXPERIENCE EVALUATION BY COOPERATIVE STUDENTS, MAIN SOURCE OF SKILLS - LAST JOB SINCE HIGH SCHOOL

		High School Shop or Classes	Work	Elsewhere	No Job
Help in Improving Own Grades	m	3.7[a/]	3.5	3.5	3.4
	sd	(1.0)	(0.9)	(1.3)	(0.8)
Help in Getting a Better Job	m	4.4	4.1	4.3	3.9
	sd	(0.7)	(1.1)	(0.8)	(1.1)
Effectiveness of Teachers in Cooperative Program	m	4.1	3.8	3.8	3.7
	sd	(0.8)	(0.8)	(0.7)	(0.8)
Value of Experience with Equipment in School in handling First Job after High School	m	4.3	3.8	4.3	3.6
	sd	(0.7)	(1.3)	(1.1)	(1.2)
Training Received on Cooperative Work Site	m	4.0	3.9	4.2	3.7
	sd	(0.8)	(1.1)	(1.2)	(1.0)
Made my Academic Subjects more Interesting and Meaningful	m	3.7	3.5	3.7	3.5
	sd	(1.1)	(1.0)	(1.3)	(1.0)
Enabled me to Get a Better Job after Graduation	m	4.2	3.7	3.6	2.8
	sd	(0.9)	(1.3)	(1.4)	(1.4)
Enabled me to Get Promotion Faster in Current or Last Job	m	3.6	3.0	2.8	2.9
	sd	(1.2)	(1.4)	(1.4)	(1.4)

Notes: a/ m = cell mean; sd = cell standard deviation.

APPENDIX TABLE D-15
EDUCATIONAL EXPERIENCE EVALUATION BY COOPERATIVE STUDENTS - BY COHORT YEAR[a]

		1966	1970
Help in Improving Own Grades	m	3.5	3.6
	sd	(1.0)	(0.9)
Help in Getting a Better Job	m	4.1	4.2
	sd	(1.0)	(1.0)
Effectiveness of Teachers in Co-op Program	m	3.8	3.8
	sd	(0.8)	(0.8)
Value of Experience with Equipment in School in Handling First Job after High School	m	3.8	4.0
	sd	(1.2)	(1.1)
Training Received on Co-op Work Site	m	3.9	4.0
	sd	(1.1)	(1.0)
Made my academic Subjects more Interesting and Meaningful	m	3.5	3.6
	sd	(1.0)	(1.0)
Enabled Me to Get a Better Job after Graduation	m	3.7	3.7
	sd	(1.2)	(1.3)
Enabled Me to Get Promoted Faster in my Current or Last Job	m	3.1	3.2
	sd	(1.4)	(1.3)

Notes: a/ m = cell mean; sd = cell standard deviation.

APPENDIX TABLE D-16
EDUCATIONAL EXPERIENCE EVALUATION BY COOPERATIVE STUDENTS - BY POST-HIGH SCHOOL EDUCATION[a]

		Post High School Education	No Post High School Education
Help in Improving Own Grades	m	3.5	3.5
	sd	(1.0)	(0.9)
Help in Getting a Better Job	m	4.1	4.2
	sd	(1.0)	(1.0)
Effectiveness of Teachers in Cooperative Program	m	3.8	3.8
	sd	(0.8)	(0.9)
Value of Experience with Equipment in School in Handling First Job after High School	m	3.9	4.0
	sd	(1.2)	(1.2)
Training Received on Cooperative Work Site	m	4.0	3.9
	sd	(1.0)	(1.1)
Made my Academic Subnects more Interesting and Meaningful	m	3.6	3.4
	sd	(1.1)	(1.0)
Enabled me to Get a Better Job after Graduation	m	3.7	3.7
	sd	(1.3)	(1.2)
Enabled me to Get Promoted Faster in my Current or Last Job	m	3.1	3.2
	sd	(1.3)	(1.4)

Notes: a/ m = cell mean; sd = cell standard deviation.

APPENDIX TABLE D-17

EDUCATIONAL EXPERIENCE EVALUATION BY COOPERATIVE STUDENTS BY MAIN SOURCE OF SKILLS - FIRST JOB AFTER HIGH SCHOOL[a/]

		High School Shop or Classes	Work	Elsewhere	No Job
Help in Improving Own Grades	m	3.5	3.5	3.7	3.4
	sd	(1.0)	(0.9)	(1.1)	(0.8)
Help in Getting a Better Job	m	4.3	4.1	4.0	3.9
	sd	(0.9)	(1.0)	(1.4)	(1.0)
Effectiveness of Teachers in Cooperative Program	m	4.0	3.7	3.9	3.7
	sd	(0.8)	(0.8)	(0.6)	(0.8)
Value of Experience with Equipment in School in handling First Job after High School	m	4.3	3.7	4.1	3.6
	sd	(0.7)	(1.3)	(1.4)	(1.2)
Training Received on Cooperative Work Site	m	4.0	4.0	3.8	3.7
	sd	(0.9)	(1.0)	(1.7)	(1.0)
Made my Academic Subjects more Interesting and Meaningful	m	3.6	3.5	3.9	3.5
	sd	(1.1)	(1.0)	(1.4)	(1.0)
Enabled me to Get a Better Job after Graduation	m	4.2	3.6	3.2	2.7
	sd	(0.9)	(1.2)	(1.5)	(1.5)
Enabled me to Get Promotion Faster in Current or Last Job	m	3.5	3.1	2.3	2.8
	sd	(1.2)	(1.4)	(1.3)	(1.4)

Notes: a/ m = cell mean; sd = cell standard deviation.

APPENDIX TABLE D-18
TYPE OF POST-SECONDARY EDUCATION, BY SEX, FOR COMBINED LONG AND SHORT-FORM MAIL QUESTIONNAIRE SAMPLE[a/]

	Cooperative			Non-Cooperative		
	Male	Female	Column Total	Male	Female	Column Total
Private Business or Trade School	62.2 23.7 23	37.8 23.3 14	23.6 37	50.0 11.6 51	50.0 12.4 51	12.0 102
Company Training School	78.6 11.3 11	21.4 5.0 3	8.9 14	58.3 3.2 14	41.7 2.4 10	2.8 24
Correspondence Course	88.9 8.2 8	11.1 1.7 1	5.7 9	61.9 3.0 13	38.1 2.0 8	2.5 21
Armed Forces	92.9 13.4 13	7.1 1.7 1	8.9 14	100.0 9.8 43	0.0 0.0 0	5.0 43
Community or Junior College	59.2 29.9 29	40.8 33.3 20	31.2 49	40.8 11.6 51	59.2 18.0 74	14.7 125
Four-Year College or University				52.3 55.0 242	47.7 53.9 221	54.5 463
Other	38.2 13.4 13	61.8 35.0 21	21.7 34	36.1 5.9 26	63.9 11.2 46	8.5 72

Note: a/ The numbers in each cell are the row percentage, the column percentage and the cell size.

APPENDIX TABLE D-19
TYPE OF POST-SECONDARY EDUCATION, BY ETHNIC ORIGIN, FOR COMBINED LONG AND SHORT-FORM MAIL QUESTIONNAIRE SAMPLE[a/]

	Cooperative			Non-Cooperative			
	Black & Other	White	Column Total	Black & Other	White	Not As-certained	Column Total
Private Business or Trade School	5.6 8.9 2	94.4 15.1 34	14.5 36	34.7 16.6 35	65.3 10.9 66	0.0 0.0 0	12.3 101
Company Training School	7.7 4.3 1	92.3 5.3 12	5.2 13	33.3 3.8 8	66.7 2.6 16	0.0 0.0 0	2.9 24
Correspondence Course	11.1 4.3 1	88.9 3.6 8	3.6 9	---	---	---	---
Armed Forces	14.3 8.7 2	85.7 5.3 12	5.6 14	20.9 4.2 9	79.1 5.6 34	0.0 0.0 0	5.3 43
Community or Junior College	14.3 30.4 7	85.7 18.7 42	19.8 49	31.5 18.5 39	68.5 14.0 85	0.0 0.0 0	15.1 124
Four-Year College or University	10.8 43.5 10	89.2 36.9 83	37.5 93	21.6 46.9 99	78.4 59.1 359	0.0 0.0 0	55.9 458
Other	0.0 0.0 0	100.0 15.1 34	13.7 34	30.4 10.0 21	68.1 7.7 47	1.4 100.0 1	8.4 69

Note: a/ The numbers in each cell are the row percentage, the column percentage, and the cell size.

APPENDIX TABLE D-20
LABOR MARKET EXPERIENCE DURING HIGH SCHOOL - BY SEX

		Cooperative			Non-cooperative		
		Total Sample	Male	Female	Total Sample	Male	Female
Total number of jobs held one month or longer while in high school	m	1.4	1.4	1.3	0.9	1.0	0.7
	sd	(0.8)	(0.9)	(0.7)	(1.1)	(1.1)	(0.9)
Total number of months student worked while he attended high school	m	21.3	21.1	21.5	7.7	10.3	5.5
	sd	(8.0)	(8.2)	(7.6)	(11.4)	(13.3)	(8.9)
Total number of months worked while a senior in high school	m	8.3	8.4	8.3	2.8	3.5	2.3
	sd	(2.6)	(3.0)	(2.3)	(3.9)	(4.1)	(3.6)
Hourly wage rate on longest job held while in high school	m	1.79	1.87	1.72	0.89	1.07	0.74
	sd	(0.74)	(0.82)	(0.66)	(1.04)	(1.14)	(0.93)
Average hourly wage rate for all jobs held while in high school	m	1.75	1.84	1.67	0.89	1.07	0.73
	sd	(0.72)	(0.79)	(0.65)	(1.01)	(1.10)	(0.91)
Hourly wage rate on job held while a senior in high school	m	1.79	1.88	1.71	0.85	1.06	0.67
	sd	(0.76)	(0.86)	(0.67)	(1.14)	(1.30)	(0.94)
Average hours worked per week on all jobs held while in high school	m	19.6	20.5	18.7	13.9	17.3	11.0
	sd	(6.2)	(7.7)	(4.7)	(15.7)	(16.6)	(14.3)

Notes: m = cell mean; sd = cell standard deviation.

APPENDIX TABLE D-21
LABOR MARKET EXPERIENCE DURING HIGH SCHOOL - BY ETHNIC ORIGIN

		Cooperative			Non-cooperative		
		Total Sample	Black & Other	White	Total Sample	Black & Other	White
Total number of jobs held one month or longer while in high school	m	1.4	1.6	1.3	0.9	0.9	0.9
	sd	(0.8)	(1.1)	(0.8)	(1.1)	(1.1)	(1.0)
Total number of months student worked while he attended high school	m	21.3	23.6	21.1	7.8	6.0	8.3
	sd	(7.9)	(10.6)	(7.6)	(11.4)	(9.4)	(12.0)
Total number of months worked while a senior in high school	m	8.3	7.9	8.4	2.8	2.2	3.0
	sd	(2.6)	(3.0)	(2.6)	(3.9)	(3.5)	(4.0)
Hourly wage rate on longest job held while in high school	m	1.79	2.06	1.76	0.89	0.87	0.90
	sd	(0.74)	(0.89)	(0.72)	(1.04)	(0.90)	(1.08)
Average hourly wage rate for all jobs held while in high school	m	1.75	1.99	1.73	0.89	0.86	0.87
	sd	(0.72)	(0.82)	(0.71)	(1.01)	(0.87)	(1.05)
Hourly wage rate on job held while a senior in high school	m	1.78	2.01	1.77	0.86	0.69	0.90
	sd	(0.76)	(1.00)	(0.74)	(1.14)	(0.91)	(1.19)
Average hours worked per week on all jobs held while in high school	m	19.5	19.9	19.5	14.0	13.6	14.0
	sd	(6.2)	(7.7)	(6.1)	(15.7)	(15.7)	(15.7)

Notes: m = cell mean; sd = cell standard deviation.

APPENDIX TABLE D-22
DISTRIBUTION OF STUDENTS HOLDING A JOB ONE MONTH OR LONGER WHILE ATTENDING HIGH SCHOOL[a]

	Cooperative			Non-cooperative		
	Black & Other	White	Total[b]	Black & Other	White	Total[b]
By Ethnic Origin:						
No Job	1	15	16	117	354	471
	6.3	93.8	100.1	24.8	75.2	100.0
	3.8	4.5	4.5	46.4	44.8	45.2
Job	25	318	343	135	436	571
	7.3	92.7	100.0	23.6	76.2	99.8
	96.2	95.5	95.5	53.6	55.2	54.8
Total[b]	26	333	359	252	790	1042
	7.2	92.8	100.0	24.2	75.8	100.0
	100.0	100.0	100.0	100.0	100.0	100.0
By Sex:	Male	Female	Total	Male	Female	Total
No Job	8	8	16	182	298	480
	50.0	50.0	100.0	37.9	62.1	100.0
	5.0	4.0	4.4	37.0	52.7	45.4
Job	153	191	344	310	267	577
	44.5	55.5	100.0	53.7	46.3	100.0
	95.0	96.0	95.6	63.0	47.3	54.6
Total[b]	161	199	360	492	565	1057
	44.7	55.3	100.0	46.5	53.5	100.0
	100.0	100.0	100.0	100.0	100.0	100.0

Notes: [a] The numbers in each cell are the cell size, row percentage, and column percentage.
[b] Total percentages do not always sum to 100.0 due to rounding.

APPENDIX TABLE D-23

EMPLOYMENT STATUS DURING HIGH SCHOOL, BY SEX, FOR COMBINED LONG AND SHORT-FORM MAIL QUESTIONNAIRE SAMPLE[a/]

	Cooperative			Non-cooperative		
	Male	Female	Column Total	Male	Female	Column Total
Held Job One Month or Longer During High School	44.6 95.5 168	55.4 96.3 209	 95.9 377	54.6 63.8 359	45.4 48.1 299	 55.6 658
Did Not Hold Any Job During High School	50.0 4.5 8	50.0 3.7 8	 4.1 16	38.8 36.2 204	61.2 51.9 322	 44.4 526

Note: a/ The numbers in each cell are the row percentage, the column percentage, and the cell size.

APPENDIX TABLE D-24
EMPLOYMENT STATUS DURING HIGH SCHOOL, BY ETHNIC ORIGIN, FOR COMBINED LONG AND SHORT-FORM MAIL QUESTIONNAIRE SAMPLE[a]

	Cooperative			Non-cooperative			
	Black & Other	White	Column Total	Black & Other	White	Not Ascertained	Column Total
Held Job One Month or Longer During High School	7.7 96.7 29	92.3 95.8 346	95.9 375	24.7 54.9 161	75.1 55.9 489	0.2 100.0 1	55.7 651
Did Not Hold Any Job During High School	6.3 3.3 1	93.8 4.2 15	4.1 16	25.5 45.1 132	74.5 44.1 385	0.0 0.0 0	44.3 517

Note: [a] The numbers in each cell are the row percentage, the column percentage and the cell size.

APPENDIX TABLE D-25
AVERAGE HOURLY WAGE RATE: ALL JOBS WHILE ATTENDING HIGH SCHOOL, STUDY SAMPLE USED IN REGRESSION ANALYSIS

		Cooperative	Non-cooperative
1966 Cohort White	m	1.52	0.72
	sd	(0.69)	(0.89)
	n	174	350
1966 Cohort Black	m	1.20	0.71
	sd	(0.74)	(0.76)
	n	5	61
1970 Cohort White	m	2.04	1.07
	sd	(0.63)	(1.18)
	n	115	322
1970 Cohort Black	m	2.18	0.94
	sd	(0.74)	(0.92)
	n	21	156
1966 Cohort Males	m	1.63	0.89
	sd	(0.72)	(0.89)
	n	80	232
1966 Cohort Females	m	1.42	0.55
	sd	(0.66)	(0.84)
	n	99	212
1970 Cohort Males	m	2.08	1.26
	sd	(0.79)	(1.25)
	n	73	238
1970 Cohort Females	m	1.94	0.83
	sd	(0.52)	(0.93)
	n	90	343
Never Been to College	m	1.66	0.84
	sd	(0.70)	(1.04)
	n	214	510
Have Been to College	m	1.87	0.93
	sd	(0.73)	(1.00)
	n	124	493

APPENDIX TABLE D-25
Average Hourly Wage Rate: All Jobs while Attending High School, Study Sample Used in Regression Analysis (continued)

		Cooperative	Non-cooperative
No Post-High School Education	m	1.46	0.72
	sd	(0.63)	(0.80)
	n	41	45
Some Non-college Post-High School Education	m	1.64	0.76
	sd	(0.70)	(0.80)
	n	48	121
High School Graduate only	m	1.83	0.93
	sd	(0.65)	(1.04)
	n	315	860
IQ Less Than 100	m	1.48	0.88
	sd	(0.73)	(0.93)
	n	48	206

Notes: m = cell mean
sd = cell standard deviation
n = cell size

APPENDIX TABLE D-26
DESCRIPTION OF TRAINING PROGRAM OTHER THAN COMMUNITY, JUNIOR OR FOUR-YEAR COLLEGE OR UNIVERSITY, RESPONDENTS TO LONG FORM MAIL QUESTIONNAIRE SAMPLE

	Cooperative						Non-cooperative					
	First Program		Second Program		Third Program		First Program		Second Program		Third Program	
	n	%	n	%	n	%	n	%	n	%	n	%
Type of Program												
Private Business or Trade School	32	38.1	2	20.0	1	25.0	91	47.2	10	27.8	-	---
Company Training School	11	13.1	-	---	-	---	16	8.3	6	16.7	-	---
Correspondence Course	5	6.0	1	10.0	2	50.0	15	7.8	3	8.3	1	33.3
Armed Forces	9	10.7	3	30.0	1	25.0	26	13.5	3	8.3	1	33.3
Apprenticeship	25	29.8	3	30.0	-	---	36	18.7	2	5.6	-	---
Manpower Training	1	1.2	-	---	-	---	3	1.6	-	---	-	---
Others	-	---	1	10.0	-	---	4	2.1	12	33.3	1	33.3
Not Ascertained	1	1.2	-	---	-	---	2	1.0	-	---	-	---
Total	84	100.0	10	100.0	4	100.0	193	100.2	36	100.0	3	99.9

APPENDIX TABLE D-27

Program Training Skills for Those Persons Acquiring
Post-Secondary Education Other Than College,
Respondents to Long Form Mail Questionnaire Sample (continued)

	Cooperative						Non-cooperative					
	First Program		Second Program		Third Program		First Program		Second Program		Third Program	
	n	%	n	%	n	%	n	%	n	%	n	%
Dancing	-	---	-	---	-	---	2	1.0	1	2.8	1	33.3
Law Enforcement	1	1.2	-	---	-	---	2	1.0	-	---	-	---
Musician	-	---	-	---	-	---	-	---	-	---	-	---
Special Reading	-	---	-	---	-	---	1	0.5	1	2.8	-	---
Stockbroker	-	---	-	---	-	---	1	0.5	-	---	-	---
Mathematics	-	---	-	---	-	---	-	---	2	5.6	1	33.3
Photography	-	---	-	---	-	---	1	0.5	3	8.3	-	---
Food Services	-	---	-	---	-	---	3	1.6	1	2.8	-	---
Butcher	-	---	-	---	-	---	1	0.5	-	---	-	---
Broadcaster	-	---	-	---	-	---	2	1.0	1	2.8	-	---
Legal Secretary	-	---	-	---	-	---	1	0.5	-	---	-	---
Military Office and Science	-	---	-	---	-	---	-	---	-	---	-	---
Others	4	4.8	1	10.0	-	---	6	3.1	2	5.6	1	33.3

APPENDIX TABLE D-27
PROGRAM TRAINING SKILLS FOR THOSE PERSONS ACQUIRING POST-SECONDARY EDUCATION OTHER THAN COLLEGE, RESPONDENTS TO LONG FORM MAIL QUESTIONNAIRE SAMPLE

	Cooperative						Non-cooperative					
	First Program		Second Program		Third Program		First Program		Second Program		Third Program	
	n	%	n	%	n	%	n	%	n	%	n	%
Stenography and General Office	4	4.8	-	---	-	---	28	14.5	5	13.9	-	---
Industry, Technical	11	13.3	2	20.0	2	50.0	39	20.2	4	11.1	-	---
Business Managerial, Accounting	3	3.6	-	---	1	25.0	10	5.2	1	2.9	-	---
Sales	5	6.0	1	10.0	-	---	5	2.6	1	2.8	-	---
Medical and Allied	21	25.3	1	10.0	-	---	20	10.4	3	8.3	-	---
Arts in Designing	1	1.2	-	---	-	---	9	4.7	1	2.8	-	---
Electronics	12	14.5	1	10.0	1	25.0	11	5.7	1	2.8	-	---
Drafting, Commercial Art	5	6.0	1	10.0	-	---	5	2.6	-	---	-	---
Court Reporter	1	1.2	-	---	-	---	-	---	2	5.6	-	---
Flying	3	3.6	1	10.0	-	---	3	1.6	1	2.8	-	---
Beautician	5	6.0	-	---	-	---	14	7.3	1	2.8	-	---
Computer Operator, Key Punch	4	4.8	1	10.0	-	---	23	12.0	3	8.3	-	---
Navigation	-	---	1	10.0	-	---	1	0.5	-	---	-	---

APPENDIX TABLE D-27

Program Training Skills for Those Persons Acquiring
Post-Secondary Education Other Than College,
Respondents to Long Form Mail Questionnaire Sample (continued)

	Cooperative						Non-cooperative					
	First Program		Second Program		Third Program		First Program		Second Program		Third Program	
	n	%	n	%	n	%	n	%	n	%	n	%
Not Ascertained	3	3.6	0	0.0	0	0.0	5	2.6	2	5.6	-	---
Total	83	99.9	10	100.0	4	100.0	193	100.1	36	100.3	3	99.9

Note: n is the cell size.

APPENDIX TABLE D-28
RELATIONSHIP OF FIRST JOB SINCE LEAVING HIGH SCHOOL TO OVERALL CAREER INTERESTS - BY SEX AND MARITAL STATUS[a]

	Cooperative			Non-cooperative		
	Not Married	Married	Total	Not Married	Married	Total
Males						
Does Not Fit In At All	25 55.6 33.3	20 44.4 32.3	45 100.0 32.8	148 65.8 64.1	77 34.2 53.8	225 100.0 60.2
Fits In Only Moderately Well	25 55.6 33.3	20 44.4 32.3	45 100.0 32.8	57 60.6 24.7	37 39.4 25.9	94 100.0 25.1
Fits In Very Well	24 52.2 32.0	22 47.8 35.5	46 100.0 33.6	26 47.3 11.3	29 52.7 20.3	55 100.0 14.7
Not Ascertained	1 100.0 1.3	0 0.0 0.0	1 100.0 0.7	---	---	---
Total	75 54.7 99.9	62 45.3 100.1	137 100.0 99.9	231 61.8 100.1	143 38.2 100.0	374 100.0 100.0
Females						
Does Not Fit In At All	24 66.7 30.4	12 33.3 13.8	36 100.0 21.7	147 72.8 53.8	55 27.2 34.6	202 100.0 46.8
Fits In Only Moderately Well	24 39.3 30.4	37 60.7 42.5	61 100.0 36.7	79 60.3 28.9	52 39.7 32.7	131 100.0 30.3
Fits In Very Well	31 45.6 39.2	37 54.4 42.5	68 100.0 41.0	47 47.5 17.2	52 52.5 32.7	99 100.0 22.9
Not Ascertained	0 0.0 0.0	1 100.0 1.1	1 100.0 0.6	---	---	---

APPENDIX TABLE D-28
Relationship of First Job Since Leaving High School To Overall Career Interests - By Sex and Marital Status[a] (continued)

	Cooperative			Non-cooperative		
	Not Married	Married	Total	Not Married	Married	Total
Total	79 47.6 100.0	87 52.4 99.9	166 100.0 100.0	273 63.2 99.9	159 36.8 100.0	432 100.0 100.0

Notes: a/ The numbers in each cell are the cell size, row percentage and column percentage.

Due to rounding, not all percentages sum to 100.0.

APPENDIX TABLE D-29
RELATIONSHIP OF LAST JOB SINCE LEAVING HIGH SCHOOL TO OVERALL CAREER INTERESTS - BY SEX AND MARITAL STATUS[a]

	Cooperative			Non-cooperative		
	Not Married	Married	Total	Not Married	Married	Total
Males						
Does Not Fit In At All	23 63.9 29.1	13 36.1 20.0	36 100.0 25.0	116 72.5 47.2	44 27.5 28.2	160 100.0 39.8
Fits In Only Moderately Well	27 54.0 34.2	23 46.0 35.4	50 100.0 34.7	91 64.1 37.0	51 35.9 32.7	142 100.0 35.3
Fits In Very Well	29 50.0 36.7	29 50.0 44.6	58 100.0 40.3	39 39.0 15.9	61 61.0 39.1	100 100.0 24.9
Not Ascertained	---	---	---	---	---	---
Total	79 54.9 100.0	65 45.1 100.0	144 100.0 100.0	246 61.2 100.1	156 38.8 100.0	402 100.0 100.0
Females						
Does Not Fit In At All	13 56.5 16.3	10 43.5 11.0	23 100.0 13.5	123 75.5 43.9	40 24.5 24.1	163 100.0 36.5
Fits In Only Moderately Well	23 45.1 28.8	28 54.9 30.8	51 100.0 29.8	81 61.8 28.9	50 38.2 30.1	131 100.0 29.4
Fits In Very Well	44 45.8 55.0	52 54.2 57.1	96 100.0 56.1	76 50.0 27.1	76 50.0 45.8	152 100.0 34.1
Not Ascertained	0 0.0 0.0	1 100.0 1.1	1 100.0 0.6	---	---	---

APPENDIX TABLE D-29

Relationship of Last Job Since Leaving High School to Overall Career Interests - By Sex and Marital Status[a] (continued)

	Cooperative			Non-cooperative		
	Not Married	Married	Total	Not Married	Married	Total
Total	80 46.8 100.1	91 53.2 100.0	171 100.0 100.0	280 62.8 99.9	166 37.2 100.0	446 100.0 100.0

Notes: a/ The numbers in each cell are the cell size, row percentage and column percentage.

Due to rounding, not all percentages sum to 100.0.

APPENDIX TABLE D-30
LABOR MOBILITY SINCE LEAVING HIGH SCHOOL - BY SEX, ETHNIC ORIGIN AND MARITAL STATUS

	Cooperative				Non-cooperative			
Acceptance of Job Required Change of Residence - by Sex	Male		Female		Male		Female	
	n	%	n	%	n	%	n	%
First Job:								
Yes	8	5.0	8	4.0	27	5.5	26	4.6
No	139	86.3	166	83.4	388	78.9	434	76.8
Inappropriate - no job	12	7.5	23	11.6	60	12.2	92	16.3
Not ascertained	2	1.2	2	1.0	17	3.5	13	2.3
Last Job:								
Yes	13	8.1	12	6.0	47	9.6	41	7.3
No	135	83.9	163	81.9	373	75.8	419	74.2
Inappropriate - no job	12	7.5	23	11.6	60	12.2	92	16.3
Not ascertained	1	0.6	1	0.5	12	2.4	13	2.3
Acceptance of Job Required Change of Residence - by Ethnic Origin	Black & Other		White		Black & Other		White	
	n	%	n	%	n	%	n	%
First Job:								
Yes	2	7.7	14	4.2	12	4.8	40	5.1
No	20	76.9	284	85.3	179	71.0	632	80.0
Inappropriate - no job	4	15.4	31	9.3	51	20.2	98	12.4
Not ascertained	---	---	4	1.2	10	4.0	20	2.5
Last Job:								
Yes	3	11.5	22	6.6	16	6.3	70	8.9
No	19	73.1	278	83.5	176	69.8	606	76.7
Inappropriate - no job	4	15.4	31	9.3	51	20.2	98	12.4
Not ascertained	---	---	2	0.6	9	3.6	16	2.0

APPENDIX TABLE D-30

Labor Mobility since leaving High School - by Sex, Ethnic Origin and Marital Status (continued)

Acceptance of Job Required Change of Residence - by Marital Status	Cooperative				Non-cooperative			
	Not Married		Married		Not Married		Married	
	n	%	n	%	n	%	n	%
First Job:								
Yes	12	6.3	4	2.4	31	4.6	21	5.7
No	155	82.0	150	88.2	510	75.7	303	81.7
Inappropriate - no job	22	11.6	13	7.6	117	17.4	33	8.9
Not ascertained	---	---	3	1.8	16	2.4	14	3.8
Last Job:								
Yes	13	6.9	12	7.1	50	7.4	36	9.7
No	154	81.5	144	84.7	492	73.0	292	78.7
Inappropriate - no job	22	11.6	13	7.6	117	17.4	33	8.9
Not ascertained	---	---	1	0.6	15	2.2	10	2.7

APPENDIX TABLE D-31
UNEMPLOYMENT CHARACTERISTICS SINCE LEAVING HIGH SCHOOL
RESPONDENTS TO LONG FORM MAIL QUESTIONNAIRE SAMPLE

	Cooperative						Non-cooperative					
	First Un-employment		Longest Un-employment		Last Un-employment		First Un-employment		Longest Un-employment		Last Un-employment	
	n	%	n	%	n	%	n	%	n	%	n	%
Main Reason for Unemployment												
Laid off, Job Ended	30	34.1	33	37.1	34	38.6	81	20.9	86	22.4	82	21.2
On Strike	--	---	1	1.1	--	---	5	1.3	4	1.0	5	1.3
Fired	1	1.1	--	---	--	---	2	0.5	2	0.5	3	0.8
Could Not Find a Job; None available	40	45.5	40	44.9	39	44.3	227	58.7	221	57.6	221	57.3
Entering Civilian Labor Force from NLF or Military Status	4	4.6	3	3.4	4	4.6	10	2.6	8	2.1	8	2.1
Geographical Mobility; Change of Residence	8	9.1	7	7.9	5	5.7	14	3.6	16	4.2	17	4.4
Quit Voluntarily	2	2.3	2	2.2	3	3.4	20	5.2	18	4.7	22	5.7
Not Ascertained	3	3.4	3	3.3	3	3.4	28	7.2	29	7.6	28	7.3
Total	88	100.1	89	99.9	88	100.0	387	100.0	384	100.1	386	100.1

APPENDIX TABLE D-31

Unemployment Characteristics since Leaving High School
Respondents to Long Form Mail Questionnaire Sample (continued)

	Cooperative						Non-cooperative					
	First Unemployment		Longest Unemployment		Last Unemployment		First Unemployment		Longest Unemployment		Last Unemployment	
	n	%	n	%	n	%	n	%	n	%	n	%
Methods Used to Find Work during Unemployment												
Answered Want Ads	63	21.4	63	21.3	63	21.1	264	21.0	264	21.0	260	21.0
Applied Directly to Firm	78	26.4	78	26.4	78	26.2	299	23.8	300	23.8	298	24.0
Checked with Friends, Relatives	67	22.7	68	23.0	67	22.5	299	23.8	298	23.7	295	23.8
Checked with Private Employment Agencies	31	10.5	31	10.5	32	10.7	147	11.7	148	11.8	143	11.5
Checked with Public Employment Agencies	39	13.2	39	13.2	39	13.1	189	15.0	190	15.1	186	15.0
Unions	7	2.4	7	2.4	8	2.7	30	2.4	29	2.3	29	2.3
Other	10	3.4	10	3.4	11	3.7	29	2.3	30	2.4	29	2.3
Total[a/]	295	100.0	296	100.0	298	100.0	1257	100.0	1259	100.1	1240	99.9

Note: a/ Totals are not always consistent due to not ascertained responses.

APPENDIX TABLE D-32
POST-HIGH SCHOOL LABOR MARKET CHARACTERISTICS OF STUDY SAMPLE USED IN REGRESSION ANALYSIS OF EFFECTS OF COOPERATIVE VOCATIONAL EDUCATION, FOR I.Q. LESS THAN 100

		I.Q. Less than 100	
		Cooperative	Non-cooperative
Total Months Elapsed since Leaving High School	m	41.5	37.0
	sd	(24.4)	(23.3)
	n	48	213
Total Months Employed since Leaving High School	m	32.3	19.7
	sd	(22.1)	(20.8)
	n	50	212
Total Months Unemployed since Leaving High School	m	1.6	4.2
	sd	(4.2)	(7.6)
	n	50	215
Total Months Employed after High School:			
First Job	m	17.8	10.5
	sd	(17.2)	(15.0)
	n	50	207
Longest Job	m	24.4	15.7
	sd	(18.9)	(18.6)
	n	50	207
Last Job	m	21.7	13.8
	sd	(19.3)	(18.4)
	n	50	209
Months Elapsed between Leaving High School and Acquiring First Job Lasting One Month or Longer	m	4.4	8.3
	sd	(11.2)	(13.7)
	n	46	176
Hourly Rate of Pay after High School:			
First Job	m	2.28	1.91
	sd	(0.9)	(1.3)
	n	48	205

APPENDIX TABLE D-32

Post-High School Labor Market Characteristics of Study Sample Used in Regression Analysis of Effects of Cooperative Vocational Education, For I.Q. Less than 100 (continued)

		I.Q. Less than 100	
		Cooperative	Non-cooperative
Longest Job	m	2.54	2.21
	sd	(1.0)	(1.4)
	n	49	206
Last Job	m	2.66	2.28
	sd	(1.0)	(1.5)
	n	49	208

Notes: m = cell mean
sd = cell standard deviation
n = cell size

APPENDIX TABLE D-33

Industry Attachment, First Job Since Leaving High School, by Sex, for Combined Long and Short-Form Mail Questionnaire Sample[a] (continued)

	Cooperative			Non-cooperative		
	Male	Female	Column Total	Male	Female	Column Total
Public Utilities	45.5 2.9 5	54.5 2.8 6	2.8 11	42.9 1.7 9	57.1 2.0 12	1.8 21
Trade (wholesale and retail)	46.3 17.8 31	53.7 16.9 36	17.3 67	42.5 26.6 145	57.5 32.6 196	29.8 341
Services (exclusive Education)	24.3 10.3 18	75.7 26.3 56	19.1 74	38.1 12.3 67	61.9 18.1 109	15.4 176
Real Estate, Finance and Insurance	4.8 0.6 1	95.2 9.4 20	5.4 21	16.7 0.6 3	83.3 2.5 15	1.6 18
Inappropriate	35.1 7.5 13	64.9 11.5 24	9.6 37	40.4 12.7 69	59.6 17.0 102	14.9 171

Note: a/ The numbers in each cell are the row percentage, the column percentage and the cell size.

APPENDIX TABLE D-33

INDUSTRY ATTACHMENT, FIRST JOB SINCE LEAVING HIGH SCHOOL, BY SEX, FOR COMBINED LONG AND SHORT-FORM MAIL QUESTIONNAIRE SAMPLE[a]

	Cooperative			Non-cooperative		
	Male	Female	Column Total	Male	Female	Column Total
Agriculture	---	---	---	66.7 0.4 2	33.3 0.2 1	--- 0.3 3
Mining	---	---	---	100.0 0.4 2	0.0 0.0 0	--- 0.2 2
Transportation	---	---	---	57.1 0.7 4	42.9 0.5 3	--- 0.6 7
Manufacturing (durable)	63.5 37.9 66	36.5 17.8 38	26.9 104	77.2 22.9 125	22.8 6.2 37	--- 14.1 162
Manufacturing (non-durable)	65.0 14.9 26	35.0 6.6 14	--- 10.3 40	72.1 9.0 49	27.9 3.2 19	--- 5.9 68
Government (excluding Education)	50.0 2.3 4	50.0 1.9 4	--- 2.1 8	34.2 4.8 26	65.8 8.3 50	--- 6.6 76
Education	15.4 1.1 2	84.6 5.2 11	--- 3.4 13	20.0 1.8 10	80.0 6.7 40	--- 4.4 50
Forestry	100.0 0.6 1	0.0 0.0 0	--- 0.3 1	---	---	---
Construction	100.0 3.4 6	0.0 0.0 0	--- 1.6 6	93.5 5.3 29	6.5 0.3 2	--- 2.7 31
Communication	20.0 0.6 1	80.0 1.9 4	--- 1.3 5	25.0 0.9 5	75.0 2.5 15	--- 1.7 20

APPENDIX TABLE D-34
INDUSTRY ATTACHMENT, FIRST JOB SINCE LEAVING HIGH SCHOOL, BY ETHNIC ORIGIN, FOR COMBINED LONG AND SHORT-FORM MAIL QUESTIONNAIRE SAMPLE[a]

	Cooperative			Non-cooperative			
	Black & Other	White	Column Total	Black & Other	White	Not Ascertained	Column Total
Agriculture	---	---	---	0.0	100.0	0.0	
				0.0	0.4	0.0	0.3
				0	3	0	3
Mining	---	---	---	50.0	50.0	0.0	
				0.4	0.1	0.0	0.2
				1	1	0	2
Transportation	---	---	---	28.6	71.4	0.0	
				0.7	0.6	0.0	0.6
				2	5	0	7
Manufacturing (durable)	2.9	97.1		29.3	20.7	0.0	
	10.0	28.2	26.8	16.2	13.1	0.0	13.9
	3	100	103	2	111	0	157
Manufacturing (non-durable)	10.0	90.0		15.2	84.8	0.0	
	13.3	10.1	10.4	3.5	6.6	0.0	5.8
	4	36	40	10	56	0	66
Government (excluding education)	37.5	62.5		48.0	52.0	0.0	
	10.0	1.4	2.1	12.7	4.6	0.0	6.6
	3	5	8	36	39	0	75
Education	0.0	100.0		36.7	63.3	0.0	
	0.0	3.7	3.4	6.3	3.7	0.0	4.3
	0	13	13	18	31	0	49
Forestry	0.0	100.0		---	---	---	---
	0.0	0.3	0.3				
	0	1	1				
Construction	0.0	100.0		17.2	82.8	0.0	
	0.0	1.7	1.6	1.8	2.8	0.0	2.6
	0	6	6	5	24	0	29
Communication	40.0	60.0		20.0	80.0	0.0	
	6.7	0.8	1.3	1.4	1.9	0.0	1.8
	2	3	5	4	16	0	20

APPENDIX TABLE D-34

Industry Attachment, First Job Since Leaving High School, by Ethnic Origin, for Combined Long and Short-Form Mail Questionnaire Sample[a] (continued)

	Cooperative			Non-cooperative			
	Black & Other	White	Column Total	Black & Other	White	Not Ascertained	Column Total
Public Utilities	30.0 10.0 3	70.0 2.0 7	2.6 10	38.1 2.8 8	61.9 1.5 13	0.0 0.0 0	1.9 21
Trade (wholesale and retail)	7.5 16.7 5	92.5 17.5 62	17.4 67	14.2 16.9 48	85.8 34.4 291	0.0 0.0 0	30.0 339
Service (excluding Education)	6.8 16.7 5	93.2 19.4 69	19.2 74	27.3 16.9 48	72.7 15.1 128	0.0 0.0 0	15.6 176
Real Estate, Finance and Insurance	4.8 3.3 1	95.2 5.6 20	5.5 21	5.6 0.4 1	94.4 2.0 17	0.0 0.0 0	1.6 18
Inappropriate	10.8 13.3 4	89.8 9.0 33	9.7 37	33.7 20.1 57	65.7 13.1 111	0.6 100.0 1	14.9 169

Note: a/ The numbers in each cell are the row percentage, the column percentage and the cell size.

APPENDIX TABLE D-35
INDUSTRY OF FIRST JOB SINCE LEAVING HIGH SCHOOL - BY SEX AND MARITAL STATUS[a]

	Cooperative Male			Cooperative Female		
	Not Married	Married	Column Total	Not Married	Married	Column Total
Agriculture	---	---	---	---	---	---
Mining	---	---	---	---	---	---
Transportation	---	---	---	---	---	---
Manufacturing (durable)	28	29	57	16	19	35
	49.1	50.9	100.0	45.7	54.3	100.0
	33.7	46.0	39.0	20.0	20.7	20.0
Manufacturing (non-durable)	13	12	25	4	7	11
	52.0	28.0	100.0	36.4	63.6	100.0
	15.7	19.0	17.1	5.0	7.6	6.4
Government (excluding Education)	4	0	4	2	1	3
	100.0	100.0	100.0	66.7	33.3	100.0
	4.8	0.0	2.7	2.5	1.1	1.7
Education	1	1	2	4	7	11
	50.0	50.0	100.0	36.4	63.6	100.0
	1.2	1.6	1.4	5.0	7.6	6.4
Construction	2	4	6	---	---	---
	33.3	66.7	100.0			
	2.4	6.3	4.1			
Forestry	1	0	1	---	---	---
	100.0	0.0	100.0			
	1.2	0.0	0.7			
Communications	0	1	1	2	2	4
	0.0	100.0	100.0	50.0	50.0	100.0
	0.0	1.6	0.7	2.5	2.2	2.3

APPENDIX D-35

Industry of First Job since Leaving High School - by Sex and Marital Status[a] (continued)

	Cooperative Male			Cooperative Female		
	Not Married	Married	Column Total	Not Married	Married	Column Total
Public Utilities	4 100.0 4.8	0 0.0 0.0	4 100.0 2.7	2 50.0 2.5	2 50.0 2.2	4 100.0 2.3
Trade (Wholesale and Retail)	15 51.7 18.1	14 48.3 22.2	29 100.0 19.9	16 50.0 20.0	16 50.0 17.4	32 100.0 18.6
Services (Excluding Education)	14 87.5 16.9	2 12.5 3.2	16 100.0 11.0	24 47.1 30.0	27 52.9 29.3	51 100.0 29.7
Finance, Real Estate, Insurance	1 100.0 1.2	0 0.0 0.0	1 100.0 0.7	10 50.0 12.5	10 50.0 10.9	20 100.0 11.6
Not Ascertained	---	---	---	0 0.0 0.0	1 100.0 1.1	1 100.0 0.6

APPENDIX TABLE D-35

Industry of First Job since Leaving High School - by Sex and Marital Status[a] (continued)

	Non-cooperative Male			Non-cooperative Female		
	Not Married	Married	Column Total	Not Married	Married	Column Total
Agriculture	2	0	2	1	0	1
	100.0	0.0	100.0	100.0	0.0	100.0
	0.8	0.0	0.5	0.3	0.0	0.2
Mining	1	1	2	---	---	---
	50.0	50.0	100.0			
	0.4	0.6	0.5			
Transportation	2	1	3	1	2	3
	67.7	33.3	100.0	33.3	66.7	100.0
	0.8	0.6	0.7	0.3	1.2	0.7
Manufacturing (durable)	62	40	102	13	17	30
	60.8	39.2	100.0	43.3	56.7	100.0
	24.7	25.0	24.8	4.5	10.3	6.6
Manufacturing (non-durable)	30	11	41	9	10	19
	73.2	26.8	100.0	47.4	52.6	100.0
	12.0	6.9	10.0	3.1	6.1	4.2
Government (excluding Education)	14	10	24	29	18	47
	58.3	41.7	100.0	61.7	38.3	100.0
	5.6	6.3	5.8	10.1	10.9	10.4
Education	6	2	8	22	15	37
	75.0	25.0	100.0	59.5	40.5	100.0
	2.4	1.3	1.9	7.7	9.1	8.2
Construction	11	12	23	0	1	1
	47.8	52.2	100.0	0.0	100.0	100.0
	4.4	7.5	5.6	0.0	0.6	0.2
Forestry	---	---	---	---	---	---
Communications	2	2	4	5	4	9
	50.0	50.0	100.0	55.6	44.4	100.0
	0.8	1.3	1.0	1.7	2.4	2.0

APPENDIX TABLE D-35
Industry of First Job since Leaving High School - by Sex and Marital Status[a] (continued)

	Non-cooperative Male			Non-cooperative Female		
	Not Married	Married	Column Total	Not Married	Married	Column Total
Public Utilities	4 50.0 1.6	4 50.0 2.5	8 100.0 1.9	8 66.7 2.8	4 33.3 2.4	12 100.0 2.7
Trade (Wholesale and Retail)	77 57.9 30.7	56 42.1 35.0	133 100.0 32.4	119 67.6 41.5	57 32.4 34.5	176 100.0 38.9
Services (Excluding Education)	39 67.2 15.5	19 32.8 11.9	58 100.0 14.1	67 65.7 23.3	35 34.3 21.2	102 100.0 22.6
Finance, Real Estate, Insurance	1 33.3 0.4	2 66.7 1.3	3 100.0 0.7	13 86.7 4.5	2 13.3 1.2	15 100.0 3.3
Not Ascertained	---	---	---	---	---	---

Notes: a/ The numbers in each cell are the cell size, the row percentage and the column percentage.

APPENDIX TABLE D-36
INDUSTRY OF LAST JOB SINCE HIGH SCHOOL - BY SEX AND MARITAL STATUS[a]

	Cooperative Male			Cooperative Female		
	Not Married	Married	Column Total	Not Married	Married	Column Total
Agriculture	---	---	---	---	---	---
Mining	---	---	---	---	---	---
Transportation	3 75.0 3.6	1 25.0 1.6	4 100.0 2.7			
Manufacturing (durable)	27 49.1 32.5	28 50.9 44.4	55 100.0 37.7	19 50.0 23.2	19 50.0 21.1	38 100.0 22.1
Manufacturing (non-durable)	13 59.1 15.7	9 40.9 14.3	22 100.0 15.1	6 46.2 7.3	7 53.8 7.8	13 100.0 7.6
Government (excluding Education)	3 37.5 3.6	5 62.5 7.9	8 100.0 5.5	3 75.0 3.7	1 25.0 1.1	4 100.0 2.3
Education	---	---	---	7 53.8 8.5	6 46.2 6.7	13 100.0 7.6
Forestry	---	---	---	---	---	---
Construction	2 33.3 2.4	4 66.7 6.3	6 100.0 4.1	---	---	---
Communications	---	---	---	1 25.0 1.2	3 75.0 1.1	4 100.0 1.2

APPENDIX TABLE D-36

Industry of Last Job since High School - by Sex and Marital Status[a] (continued)

	Cooperative Male			Cooperative Female		
	Not Married	Married	Column Total	Not Married	Married	Column Total
Public Utilities	3	1	4	1	1	2
	75.0	25.0	100.0	50.0	50.0	100.0
	3.6	1.6	2.7	1.2	1.1	1.2
Trade (wholesale and retail)	12	9	21	14	14	28
	57.1	42.9	100.0	50.0	50.0	100.0
	14.5	14.3	14.4	17.1	15.6	16.3
Services (excluding Education)	19	4	23	23	26	49
	82.6	17.4	100.0	46.9	53.1	100.0
	22.9	6.3	15.8	28.0	28.9	28.5
Finance, Real Estate, Insurance	1	2	3	8	12	20
	33.3	66.7	100.0	40.0	60.0	100.0
	1.2	3.2	2.1	9.8	13.3	11.6
Not Ascertained	---	---	---	0	1	1
				0.0	100.0	100.0
				0.0	1.1	0.6

APPENDIX TABLE D-36
Industry of Last Job since High School -
by Sex and Marital Status[a] (continued)

	Non-cooperative Male			Non-cooperative Female		
	Not Married	Married	Column Total	Not Married	Married	Column Total
Agriculture	4	1	5	1	0	1
	80.0	20.0	100.0	100.0	0.0	100.0
	1.6	0.6	1.2	0.3	0.0	0.2
Mining	2	1	3	1	0	1
	66.7	33.3	100.0	100.0	0.0	100.0
	0.8	0.6	0.7	0.3	0.0	0.2
Transportation	3	4	7	2	1	3
	42.9	57.1	100.0	66.7	33.3	100.0
	1.2	2.5	1.7	0.7	0.6	0.7
Manufacturing (durable)	53	52	105	18	14	33
	50.5	49.5	100.0	54.5	45.5	100.0
	21.0	32.3	25.4	6.2	9.1	7.3
Manufacturing	30	9	39	9	9	18
	76.9	23.1	100.0	50.0	50.0	100.0
	11.9	5.6	9.4	3.1	5.5	4.0
Government (excluding Education)	20	15	35	27	14	41
	57.1	42.9	100.0	65.9	34.1	100.0
	7.9	9.3	8.5	9.3	8.5	9.0
Education	14	9	23	42	20	62
	60.9	39.1	100.0	67.7	32.3	100.0
	5.6	5.6	5.6	14.4	12.2	13.6
Forestry	0	1	1	0	1	1
	0.0	100.0	100.0	0.0	0.6	100.0
	0.0	0.6	0.2	0.0	100.0	0.2
Construction	13	11	24	0	1	1
	54.2	45.8	100.0	0.0	100.0	100.0
	5.2	6.8	5.8	0.0	0.6	0.2
Communications	3	1	4	5	5	10
	75.0	25.0	100.0	50.0	50.0	100.0
	1.2	0.6	1.0	1.7	3.0	2.2

APPENDIX TABLE D-36

Industry of Last Job since High School - by Sex and Marital Status[a] (continued)

	Non-cooperative Male			Non-cooperative Female		
	Not Married	Married	Column Total	Not Married	Married	Column Total
Public Utilities	4	7	11	7	4	11
	36.4	63.6	100.0	63.6	36.4	100.0
	1.6	4.3	2.7	2.4	2.4	2.4
Trade (wholesale and retail)	64	31	95	103	47	150
	67.4	32.6	100.0	68.7	31.3	100.0
	25.4	19.3	23.0	35.4	28.7	33.0
Services (excluding Education)	38	13	51	65	40	105
	74.5	25.5	100.0	61.9	38.1	100.0
	15.1	8.1	12.3	23.3	24.4	23.1
Finance, Real Estate, Insurance	4	6	10	10	8	18
	40.0	60.0	100.0	55.6	44.4	100.0
	1.6	3.7	2.4	3.4	4.9	4.0
Not Ascertained	---	---	---	1	0	1
	100.0			100.0	0.0	100.0
				0.3	0.0	0.2

Notes: a/ The numbers in each cell are the cell size, the row percentage and the column percentage.

APPENDIX TABLE D-37

LABOR MARKET EXPERIENCE: INDUSTRY OF LAST JOB SINCE LEAVING HIGH SCHOOL, RESPONDENTS TO LONG FORM QUESTIONNAIRE

	Cooperative				Non-cooperative			
	n	%	n	%	n	%	n	%
By Sex:	Male		Female		Male		Female	
Trade (wholesale and retail)	23	14.3	25	12.6	97	19.7	154	27.3
Services	20	12.4	52	26.1	59	12.0	95	16.8
Finance, Real Estate, Insurance	1	0.6	18	9.0	6	1.2	18	3.2
No Job	12	7.5	23	11.6	60	12.2	91	16.1
Not Ascertained	1	0.6	4	2.0	18	3.7	25	4.6
By Ethnic Origin:	Black & Other		White		Black & Other		White	
Trade (wholesale and retail)	2	7.7	46	13.8	31	12.3	219	27.7
Services	5	19.2	67	20.1	38	15.1	115	14.6
Finance, Real Estate, Insurance	1	3.8	18	5.4	2	0.8	22	2.8
No Job	4	15.4	31	9.3	50	19.8	98	12.4
Not Ascertained	---	---	5	1.5	12	4.8	30	3.8

APPENDIX TABLE D-37

Labor Market Experience: Industry of Last Job Since Leaving High School, Respondents to Long Form Questionnaire (continued)

	Cooperative				Non-cooperative			
	n	%	n	%	n	%	n	%
By Marital Status:	Not Married		Married		Not Married		Married	
Trade (wholesale and retail)	25	13.2	23	13.5	179	26.6	72	19.4
Services	43	22.8	29	17.1	100	14.8	52	14.0
Finance, Real Estate, Insurance	10	5.3	9	5.3	13	1.9	11	3.0
No Job	22	11.6	13	7.6	116	17.2	33	8.9
Not Ascertained	3	1.6	2	1.2	22	3.3	19	5.1

APPENDIX TABLE D-38
CIVILIAN LABOR FORCE PARTICIPATION BEHAVIOR OF THE STUDY SAMPLE SINCE LEAVING HIGH SCHOOL, BY COHORT AND SEX AND ETHNIC ORIGIN[1]

		Total Number of Months:			
		Employed	Unemployed	Ascertained	Available for Civilian Labor Force
Cooperative:					
1966 Cohort					
Total	m	44.8	1.0	2.8	61.2
	sd	19.6	2.8	7.1	13.2
	n	126	126	126	123
Males	m	45.9	1.2	1.4	55.5
	sd	22.0	2.3	5.1	18.1
	n	54	54	54	53
Females	m	43.9	.9	3.8	65.4
	sd	17.8	3.2	8.2	4.4
	n	72	72	72	70
Whites	m	44.8	1.0	2.9	61.0
	sd	19.5	2.8	7.2	13.4
	n	121	121	121	119
Blacks & Others	m	44.4	2.0	.6	65.0
	sd	24.6	4.5	1.3	.0
	n	5	5	5	4
1970 Cohort					
Total	m	9.7	2.0	.8	16.4
	sd	6.5	4.1	2.2	3.9
	n	128	128	128	128
Males	m	9.6	1.8	1.2	15.4
	sd	6.3	3.2	2.8	5.8
	n	52	52	52	52
Females	m	9.7	2.2	.6	17.1
	sd	6.6	4.6	1.6	1.4
	n	76	76	76	76

APPENDIX TABLE D-38

Civilian Labor Force Participation Behavior of the Study Sample since Leaving High School, by Cohort and Sex and Ethnic Origin[1] (continued)

		Total Number of Months:			
		Employed	Unemployed	Ascertained	Available for Civilian Labor Force
Whites	m	9.8	2.1	.9	16.4
	sd	6.5	4.2	2.3	3.9
	n	115	115	115	115
Blacks & Others	m	9.0	1.4	.2	16.5
	sd	6.6	3.4	.6	3.9
	n	13	13	13	13
Non-cooperative					
1966 Cohort					
Total	m	34.2	2.3	2.9	59.5
	sd	21.5	6.1	10.1	15.7
	n	337	337	337	337
Males	m	34.3	2.2	2.5	54.2
	sd	22.0	5.2	10.0	18.1
	n	174	174	174	174
Females	m	34.1	2.5	3.4	65.1
	sd	20.9	6.9	10.6	9.9
	n	163	163	163	163
Whites	m	33.3	2.0	2.9	59.4
	sd	21.3	5.9	10.1	15.8
	n	276	276	276	276
Blacks & Others	m	38.4	4.0	3.0	60.0
	sd	21.8	6.7	10.6	15.3
	n	61	61	61	61
1970 Cohort					
Total	m	8.7	2.7	1.1	19.2
	sd	8.0	5.2	3.2	7.9
	n	418	419	419	417

APPENDIX TABLE D-38
Civilian Labor Force Participation Behavior of the Study Sample since Leaving High School, by Cohort and Sex and Ethnic Origin[1/] (continued)

		Total Number of Months:			
		Employed	Unemployed	Ascertained	Available for Civilian Labor Force
Males	m	8.9	2.2	.7	18.1
	sd	7.6	4.4	2.3	8.4
	n	169	169	169	167
Females	m	8.6	3.1	1.4	20.0
	sd	8.3	5.6	3.7	7.5
	n	249	250	250	250
Whites	m	9.4	2.1	.7	19.5
	sd	8.3	4.6	2.5	8.7
	n	320	320	320	319
Blacks & Others	m	6.2	4.9	2.2	18.4
	sd	6.2	6.2	4.7	4.6
	n	98	99	99	98

Notes: 1/ This sample is somewhat larger than the study sample due to the fact that this sample does not conform to the set of observations used in the regression analyses of Chapter 7.

m = cell mean; sd = cell standard deviation; n - cell size.

APPENDIX E

SUPPLEMENTARY REGRESSIONS

Notes to Appendix E

The following notes apply to those tables which display regression coefficients and their standard errors.

For these tables the two statistics displayed are the partial regression coefficient and the standard error of the coefficient immediately below it in parentheses. On these tables,

* means significant at the 5 percent level and
** means significant at the 1 percent level.

Throughout the remaining tables, where appropriate,

R^2 = the coefficient of determination (percent of variance explained by the independent variables) and

F = the F-ratio of the regression model.

APPENDIX TABLE E-1

Difference in Grade Point Average in Senior or Last Year in School and Percent of Days Absent, Cooperative Vocational Education Students Compared to Academic, General, Vocational and Undetermined Curriculum Students (continued)

	Academic	General	Undetermined	Vocational	Number of Observations
Percent of Days Absent	0.009 (0.005)	0.029** (0.006)	0.026 (0.016)	0.007 (0.005)	
Black Males					54
Grade Point Average	0.835** (0.292)	0.661* (0.292)	1.218 (0.653)	0.567* (0.280)	
Percent of Days Absent	0.018 (0.021)	0.002 (0.021)	-0.051 (0.050)	0.026 (0.020)	
Black Females					99
Grade Point Average	0.544* (0.262)	-0.192 (0.263)	0.377 (0.732)	0.124 (0.258)	
Percent of Days Absent	-0.001 (0.015)	0.024 (0.016)	0.004 (0.042)	-0.001 (0.015)	
1966 Cohort Males					204
Grade Point Average	0.404** (0.119)	0.090 (0.137)	-0.294 (0.417)	0.204 (0.121)	
Percent of Days Absent	0.018** (0.006)	0.037** (0.007)	0.071** (0.023)	0.017** (0.006)	
1970 Cohort Males					197
Grade Point Average	0.129 (0.090)	-0.313* (0.146)	-0.495 (0.370)	-0.057 (0.125)	
Percent of Days Absent	0.007 (0.006)	0.017 (0.009)	-0.030 (0.024)	0.010 (0.008)	

APPENDIX TABLE E-1

DIFFERENCE IN GRADE POINT AVERAGE IN SENIOR OR LAST YEAR IN SCHOOL AND PERCENT OF DAYS ABSENT, COOPERATIVE VOCATIONAL EDUCATION STUDENTS COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM STUDENTS

	Academic	General	Undetermined	Vocational	Number of Observations
Total Sample					904
Grade Point Average	0.302** (0.051)	-0.060 (0.063)	-0.429* (0.183)	0.090 (0.056)	
Percent of Days Absent	0.009** (0.003)	0.029 (0.004)	0.016 (0.011)	0.010** (0.003)	
Males					401
Grade Point Average	0.230** (0.071)	-0.116 (0.097)	-0.039 (0.272)	0.067 (0.085)	
Percent of Days Absent	0.011 (0.004)	0.028 (0.006)	0.013 (0.017)	0.013** (0.005)	
Females					503
Grade Point Average	0.383** (0.074)	-0.001 (0.084)	-0.482 (0.248)	0.098 (0.076)	
Percent of Days Absent	0.007 (0.004)	0.029** (0.005)	0.019 (0.015)	0.006 (0.005)	
White Males					347
Grade Point Average	0.189** (0.073)	0.207* (0.105)	-0.642* (0.301)	0.052 (0.089)	
Percent of Days Absent	0.011 (0.004)	0.034** (0.006)	0.022 (0.017)	0.010* (0.004)	
White Females					404
Grade Point Average	0.329** (0.077)	0.071 (0.089)	-0.626* (0.261)	0.089 (0.078)	

APPENDIX TABLE E-1

Difference in Grade Point Average in Senior or Last Year in School and Percent of Days Absent, Cooperative Vocational Education Students Compared to Academic, General, Vocational and Undetermined Curriculum Students (continued)

	Academic	General	Undetermined	Vocational	Number of Observations
1966 Cohort Female					211
Grade Point Average	0.481** (0.098)	0.178 (0.127)	-0.336 (0.276)	0.156 (0.097)	
Percent of Days Absent	0.010 (0.006)	0.020* (0.008)	0.024 (0.017)	0.006 (0.006)	
1970 Cohort Female					292
Grade Point Average	0.308** (0.108)	-0.141 (0.115)	-0.623 (0.448)	0.048 (0.113)	
Percent of Days Absent	0.006 (0.007)	0.030** (0.007)	0.022 (0.028)	0.005 (0.007)	
1966 Cohort White					355
Grade Point Average	0.405** (0.080)	0.086 (0.100)	-0.544* (0.253)	0.181* (0.078)	
Percent of Days Absent	0.013** (0.005)	0.034** (0.006)	0.047** (0.015)	0.011* (0.004)	
1970 Cohort White					396
Grade Point Average	0.163* (0.070)	-0.200* (0.096)	-0.746* (0.306)	-0.029 (0.090)	
Percent of Days Absent	0.008 (0.004)	0.026** (0.006)	-0.003 (0.019)	0.005 (0.006)	
1966 Cohort Black					60
Grade Point Average	0.820** (0.300)	0.523 (0.311)	0.627 (0.664)	0.544 (0.326)	

APPENDIX TABLE E-1

Difference in Grade Point Average in Senior or Last Year in School and Percent of Days Absent, Cooperative Vocational Education Students Compared to Academic, General, Vocational and Undetermined Curriculum Students (continued)

	Academic	General	Undetermined	Vocational	Number of Observations
Percent of Days Absent	0.001 (0.017)	0.007 (0.018)	0.003 (0.038)	-0.003 (0.019)	
1970 Cohort Black					93
Grade Point Average	0.614* (0.267)	-0.135 (0.263)	0.613 (0.738)	0.205 (0.243)	
Percent of Days Absent	0.003 (0.018)	0.016 (0.017)	-0.039 (0.051)	0.006 (0.016)	
All Cooperative Samples plus Noncooperative Vocational Education Samples Only					444
Grade Point Average	---	---	---	0.098 (0.056)	
Percent of Days Absent	---	---	---	0.010** (0.003)	

APPENDIX TABLE E-2

COEFFICIENTS OF DETERMINATION AND F-RATIOS OF DIFFERENCE IN GRADE POINT AVERAGE IN SENIOR OR LAST YEAR IN SCHOOL AND PERCENT OF DAYS ABSENT COOPERATIVE VOCATIONAL EDUCATION STUDENTS COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM STUDENTS

	Senior or Last Year Grade Point Average		Percent of Time Absent	
	R^2	F	R^2	F
Total Sample	.45	67.28	.38	44.67
Males	.42	9.54	.31	15.79
Females	.46	42.39	.42	32.44
White Males	.43	28.36	.34	16.98
White Females	.48	40.51	.43	29.64
Black Males	.50	4.84	.41	2.94
Black Females	.40	6.59	.43	6.65
1966 Cohort Males	.45	17.65	.40	12.84
1970 Cohort Males	.42	14.74	.29	7.47
1966 Cohort Females	.55	27.28	.43	15.28
1970 Cohort Females	.43	23.49	.41	19.39
1966 Cohort White	.53	43.01	.41	23.64
1970 Cohort White	.43	31.89	.37	22.71
1966 Cohort Black	.52	5.93	.48	4.56
1970 Cohort Black	.35	5.05	.26	2.90
All Cooperative Samples plus Non-cooperative Vocational Education Samples	.29	21.74	.34	24.34

APPENDIX TABLE E-3

COEFFICIENTS OF DETERMINATION AND F-RATIOS OF EFFECT OF CURRICULUM STRUCTURE ON GRADE POINT AVERAGE IN SENIOR OR LAST YEAR IN HIGH SCHOOL AND PERCENT OF DAYS ABSENT IN SENIOR OR LAST YEAR IN HIGH SCHOOL

	Senior or Last Year Grade Point Average		Percent of Time Absent	
	R^2	F	R^2	F
Total Sample	.49	77.73	.38	44.84
Males	.46	10.47	.32	16.84
Females	.50	48.32	.42	32.38
White Males	.46	32.38	.34	17.40
White Females	.50	44.57	.42	28.95
Black Males	.55	5.96	.39	2.74
Black Females	.45	8.17	.48	7.99
1966 Cohort Males	.47	19.50	.38	12.01
1970 Cohort Males	.47	18.24	.30	8.14
1966 Cohort Females	.56	28.79	.45	16.30
1970 Cohort Females	.47	27.29	.40	18.82
1966 Cohort White	.54	44.24	.40	23.17
1970 Cohort White	.47	38.06	.37	22.49
1966 Cohort Black	.58	7.73	.58	6.64
1970 Cohort Black	.42	6.67	.27	2.99
All Cooperative Samples plus Non-cooperative Vocational Education Samples	.32	18.27	.35	19.38

APPENDIX TABLE E-4
DIFFERENCE IN PROBABILITY OF HIGH SCHOOL GRADUATION, COOPERATIVE VOCATIONAL CURRICULUM COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM

	Academic	General	Vocational	Undetermined	Number of Observations
Total	-.020 (.018)	-.160** (.022)	-.541** (.064)	.004 (.020)	904
Males	-.011 (.022)	-.150** (.031)	-.353** (.085)	-.004 (.027)	401
Females	-.028 (.028)	-.162** (.031)	-.696** (.093)	.009 (.028)	503
White Males	-.018 (.023)	-.178** (.033)	-.466** (.092)	-.020 (.028)	347
White Females	-.034 (.029)	-.149** (.034)	-.833** (.098)	-.000 (.029)	404
Black Males	-.132 (.097)	.125 (.097)	.280 (.217)	.206* (.093)	54
Black Females	.013 (.097)	-.192 (.098)	-.004 (.271)	.050 (.096)	99
1966 Cohort Males	-.026 (.034)	-.137** (.039)	-.969** (.119)	-.020 (.035)	204
1970 Cohort Males	.001 (.028)	-.147** (.045)	.087 (.115)	.029 (.039)	197
1966 Cohort Females	-.009 (.037)	-.125** (.048)	-.645** (.104)	.006 (.037)	211
1970 Cohort Females	-.038 (.041)	-.162** (.043)	-.841** (.168)	.020 (.042)	292
1966 Cohort White	-.010 (.025)	-.111** (.032)	-.928** (.080)	-.009 (.025)	355

APPENDIX TABLE E-4
Difference in Probability of High School Graduation,
Cooperative Vocational Curriculum Compared to Academic,
General, Vocational and Undetermined Curriculum (continued)

	Academic	General	Vocational	Undetermined	Number of Observations
1970 Cohort White	-.029 (.025)	-.181** (.035)	-.374** (.111)	.008 (.032)	396
1966 Cohort Black	-.018 (.109)	-.201 (.113)	.003 (.241)	-.012 (.118)	60
1970 Cohort Black	.095 (.099)	.004 (.098)	.247 (.274)	.166 (.090)	93
All Cooperative Samples plus Non-cooperative Vocational Education Samples	---	---	.014 (.014)	---	491

APPENDIX TABLE E-5
DIFFERENCE IN PROBABILITY OF ACQUIRING SOME POST-SECONDARY EDUCATION AFTER LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL CURRICULUM COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM

	Academic	General	Vocational	Undetermined	Number of Observations
Total	.197** (.038)	.004 (.046)	-.290* (.135)	-.039 (.041)	904
Males	.080 (.049)	.052 (.068)	-.393* (.190)	-.014 (.059)	401
Females	.334** (.056)	-.028 (.063)	-.176 (.186)	-.035 (.057)	503
White Males	.071 (.051)	.030 (.073)	-.426* (.210)	-.009 (.062)	367
White Females	.347** (.060)	.059 (.070)	-.211 (.204)	-.039 (.061)	404
Black Males	.322 (.219)	.243 (.218)	-.097 (.489)	.113 (.209)	54
Black Females	.237 (.168)	-.322 (.169)	.262 (.470)	-.154 (.166)	99
1966 Cohort Males	.070 (.076)	.119 (.088)	-.547* (.266)	.067 (.077)	204
1970 Cohort Males	.099 (.067)	-.008 (.108)	-.273 (.275)	-.069 (.093)	197
1966 Cohort Females	.247** (.081)	-.060 (.105)	-.150 (.227)	-.097 (.080)	211
1970 Cohort Females	.425** (.078)	-.005 (.083)	-.235 (.324)	.019 (.082)	355
1966 Cohort White	.144* (.059)	.120 (.074)	-.394* (.188)	-.050 (.058)	355

APPENDIX TABLE E-5

Difference in Probability of Acquiring some Post-Secondary Education after Leaving High School, Cooperative Vocational Curriculum Compared to Academic, General, Vocational and Undetermined Curriculum (continued)

	Academic	General	Vocational	Undetermined	Number of Observations
1970 Cohort White	.218** (.053)	-.000 (.072)	-.208 (.231)	-.007 (.068)	396
1966 Cohort Black	.284 (.202)	-.132 (.209)	.364 (.448)	.090 (.220)	60
1970 Cohort Black	.239 (.186)	-.141 (.184)	-.522 (.515)	-.171 (.170)	93
All Cooperative Samples plus Non-cooperative Vocational Education Samples	---	---	-.032 (.046)	---	491

APPENDIX TABLE E-6

COEFFICIENTS OF DETERMINATION AND F-RATIOS OF PROBABILITY OF HIGH SCHOOL GRADUATION AND OF ACQUIRING SOME POST-SECONDARY EDUCATION AFTER LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL CURRICULUM COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM

	High School Graduation		Post-Secondary Education	
	R^2	F	R^2	F
Total Sample	.22	23.02	.23	24.19
Males	.16	7.64	.24	12.28
Females	.28	18.85	.25	16.20
White Males	.21	10.07	.23	10.90
White Females	.33	21.16	.28	17.13
Black Males	.19	1.11	.37	2.85
Black Females	.21	2.63	.23	2.94
1966 Cohort Males	.33	10.43	.20	5.29
1970 Cohort Males	.19	4.73	.24	6.44
1966 Cohort Females	.27	8.38	.25	7.35
1970 Cohort Females	.30	13.56	.24	10.04
1966 Cohort White	.36	21.40	.24	11.78
1970 Cohort White	.25	13.93	.24	13.72
1966 Cohort Black	.18	1.21	.28	2.19
1970 Cohort Black	.19	2.14	.19	2.12
All Cooperative Samples plus Non-cooperative Vocational Education Samples	.03	1.77	.10	6.56

APPENDIX TABLE E-7

COEFFICIENTS OF DETERMINATION AND F-RATIOS OF THE EFFECT OF CURRICULUM STRUCTURE ON THE PROBABILITY OF HIGH SCHOOL GRADUATION AND OF ACQUIRING SOME POST-SECONDARY EDUCATION AFTER LEAVING HIGH SCHOOL

	High School Graduation		Post-Secondary Education	
	R^2	F	R^2	F
Total Sample	.34	42.65	.30	35.20
Males	.25	12.74	.29	16.07
Females	.44	38.17	.32	22.96
White Males	.30	15.97	.29	14.99
White Females	.46	36.65	.37	25.69
Black Males	.16	.93	.39	3.19
Black Females	.38	6.09	.18	2.14
1966 Cohort Males	.23	6.54	.19	5.08
1970 Cohort Males	.31	9.32	.36	11.50
1966 Cohort Females	.45	18.47	.34	11.61
1970 Cohort Females	.45	25.47	.30	13.19
1966 Cohort White	.35	21.16	.28	15.25
1970 Cohort White	.40	28.33	.36	24.51
1966 Cohort Black	.19	1.26	.30	2.43
1970 Cohort Black	.36	5.25	.18	2.05
All Cooperative Samples plus Non-cooperative Vocational Education Samples	.16	8.18	.19	9.92

APPENDIX TABLE E-8

ANALYSIS OF COOPERATIVE VOCATIONAL EDUCATION ON VOTER REGISTRATION BEHAVIOR

	Academic	General	Vocational	Undetermined	Number of Obser-vations
Total Sample	0.035 (0.058)	-0.022 (0.071)	0.036 (0.063)	-0.071 (0.181)	498
Males	0.107 (0.071)	0.025 (0.102)	0.124 (0.092)	0.201 (0.266)	246
Females	-0.089 (0.105)	-0.099 (0.104)	-0.067 (0.088)	-0.031 (0.252)	252
White	0.036 (0.060)	-0.000 (0.079)	-0.007 (0.066)	0.011 (0.194)	423
Black	0.298 (0.265)	0.306 (0.252)	0.574* (0.253)	-0.479 (0.574)	75

APPENDIX TABLE E-9
COEFFICIENTS OF DETERMINATION AND F-RATIOS OF VOTER REGISTRATION BEHAVIOR

	Vocational Curriculum Compared to Academic, General, Vocational and Undetermined Curriculum		Analysis of Effect by Curriculum Structure	
	R^2	F	R^2	F
Total Sample	.07	2.97	.07	3.05
Males	.08	1.91	.10	2.36
Females	.09	2.12	.09	2.12
White	.07	2.77	.07	2.85
Black	.22	1.63	.17	1.78

APPENDIX TABLE E-10

DIFFERENCE IN TOTAL MONTHS EMPLOYED, FIRST JOB SINCE LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL EDUCATIONAL STUDENTS COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM STUDENTS

	Academic	General	Vocational	Undetermined	Number of Observations
Total Sample	-5.6** (1.2)	-5.0** (1.5)	-4.3** (1.3)	-4.9 (4.2)	868
Males	-7.6** (1.7)	-5.3* (2.3)	-7.1** (2.0)	-11.9 (6.4)	391
Females	-3.5 (1.8)	-4.8* (1.9)	-1.6 (1.7)	2.1 (5.5)	477
White Males	-7.9** (1.8)	-7.3** (2.5)	-7.2** (2.2)	-14.1* (7.2)	337
White Females	-3.3 (2.1)	-4.8* (2.2)	-2.0 (1.9)	3.6 (6.3)	389
Black Males	-3.9 (7.1)	8.1 (6.4)	-2.0 (5.9)	10.0 (13.9)	54
Black Females	-3.7 (4.8)	-4.0 (4.9)	-0.4 (4.8)	-12.5 (12.9)	88
1966 Cohort Males	-16.1** (3.6)	-8.4* (4.1)	-14.1** (3.6)	-21.9 (12.7)	216
1970 Cohort Males	-3.5** (1.0)	-3.1* (1.5)	-0.4 (1.3)	-5.2 (3.6)	175
1966 Cohort Females	-5.2 (3.8)	-5.2 (4.3)	-3.5 (3.3)	8.0 (10.0)	217
1970 Cohort Females	-1.0 (1.3)	-2.3 (1.4)	0.1 (1.3)	-5.2 (5.1)	260

APPENDIX TABLE E-10

Difference in Total Months Employed, First Job since Leaving High School, Cooperative Vocational Educational Students Compared to Academic, General, Vocational and Undetermined Curriculum Students (continued)

	Academic	General	Vocational	Undetermined	Number of Observations
1966 Cohort White	-11.0** (2.8)	-8.2* (3.3)	-8.5** (2.5)	-4.8 (8.3)	371
1970 Cohort White	-2.1* (0.8)	-2.6* (1.1)	0.1 (1.1)	-4.7 (3.5)	355
1966 Cohort Black	-15.0 (10.4)	-0.8 (9.8)	-6.6 (9.8)	-17.5 (20.3)	62
1970 Cohort Black	-.9 (2.1)	-3.1 (2.1)	-.5 (1.1)	-3.8 (5.6)	80
All Cooperative Samples plus Non-cooperative Vocational Educational Samples	---	---	4.1** (1.5)	---	441
College Graduates	-19.5** (3.2)	-19.6** (5.3)	-21.1** (4.2)	-24.4** (8.4)	119
California Mental Maturity IQ less than 100	-9.7 (5.3)	-2.8 (3.7)	-5.9 (3.3)	-9.1 (10.1)	155
Those Who have had No Post High School Education	-0.4 (2.1)	-3.4 (2.4)	-2.8 (2.0)	-2.2 (5.3)	304
Persons Who have Completed some Non-college Post High School Education	-12.0* (5.1)	-1.3 (4.2)	-0.4 (3.8)	---	118

APPENDIX TABLE E-11
DIFFERENCE IN TOTAL MONTHS EMPLOYED LONGEST JOB AFTER LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL EDUCATIONAL STUDENTS COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM STUDENTS

	Academic	General	Vocational	Undetermined	Number of Observations
Total Sample	-4.9** (1.9)	-2.3 (1.4)	-2.0 (1.3)	-0.7 (4.0)	868
Males	-6.3** (1.6)	-0.6 (2.1)	-3.3 (1.8)	-3.0 (5.9)	391
Females	-4.2* (1.7)	-4.1* (1.8)	-1.0 (1.6)	-0.2 (5.2)	477
White Males	-7.0** (1.6)	-0.9 (2.3)	-2.8 (2.0)	3.1 (6.0)	337
White Females	-5.3** (1.9)	-4.1 (2.0)	-1.7 (1.8)	2.2 (5.9)	389
Black Males	-2.8 (6.4)	5.7 (5.7)	-3.5 (5.3)	8.4 (12.4)	54
Black Females	1.6 (4.8)	0.3 (4.9)	5.0 (4.8)	-12.6) (12.8)	88
1966 Cohort Males	-11.4** (3.3)	1.9 (3.7)	-7.0* (3.2)	10.8 (11.4)	216
1970 Cohort Males	-2.6** (0.9)	-2.1 (1.4)	0.1 (1.2)	-6.0 (3.4)	175
1966 Cohort Females	-6.2 (3.6)	-6.2 (4.1)	-1.8 (3.1)	3.4 (9.5)	217
1970 Cohort Females	-2.2 (1.2)	-1.5 (1.3)	0.0 (1.3)	1.5 (4.8)	260

APPENDIX TABLE E-11

Difference in Total Months Employed, Longest Job since Leaving High School, Cooperative Vocational Educational Students Compared to Academic, General, Vocational and Undetermined Curriculum Students (continued)

	Academic	General	Voca-tional	Undeter-mined	Number of Obser-vations
1966 Cohort White	-10.7** (2.6)	-2.5 (3.1)	-4.4 (2.4)	3.6 (7.8)	371
1970 Cohort White	-2.6** (0.8)	-1.3 (1.1)	0.2 (1.0)	-1.7 (3.3)	355
1966 Cohort Black	8.5 (10.1)	9.3 (9.6)	6.4 (9.5)	2.3 (19.8)	62
1970 Cohort Black	-1.1 (2.0)	-3.5 (2.2)	-.4 (1.9)	-4.7 (5.4)	80
All Cooperative Samples plus Non-cooperative Vocational Educational Samples	---	---	2.2 (1.4)	---	441
College Graduates	-17.6** (3.8)	2.1 (6.3)	-18.2** (5.0)	-21.9* (10.0)	119
California Mental Maturity IQ Less than 100	-7.3 (5.0)	-0.4 (3.5)	-3.2 (3.2)	28.2** (9.6)	155
Those Who have had No Post High School Education	-0.8 (1.9)	-2.7 (2.2)	-2.7 (1.9)	1.6 (4.9)	304
Persons Who have Completed some Non-college Post High School Education	-6.4 (4.6)	2.6 (3.8)	2.9 (3.5)	---	118

TABLE E-12

IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, TOTAL MONTHS EMPLOYED ON THE LONGEST JOB HELD SINCE LEAVING HIGH SCHOOL

	Coop-erative	Academic	General	Vocational	Unde-termined	Grand Mean
Total Sample	2.4	-2.5	.2	.4	1.7	17.8
Males	2.9	-3.4	2.8	-.4	5.8	18.6
Females	2.3	-2.0	-1.8	1.2	2.1	17.1
White Males	3.1	-3.8	2.2	.4	6.2	18.9
White Females	2.6	-2.7	-1.5	.9	4.8	17.4
Black Males	.4	-2.5	6.1	-3.2	8.8	17.2
Black Females	-2.0	-.4	-1.7	3.0	-14.6	15.4
1966 Cohort Males	5.1	-6.3	7.0	-1.9	15.9	26.5
1970 Cohort Males	1.2	-1.4	-.9	1.3	-4.8	8.9
1966 Cohort Females	3.0	-3.3	-3.2	1.2	6.4	26.1
1970 Cohort Females	1.0	-1.2	-.5	1.0	2.5	9.5
1966 Cohort White	4.6	-6.0	2.1	.2	8.2	26.0
1970 Cohort White	1.1	-1.5	-.3	1.3	-.7	9.9
1966 Cohort Black	-7.5	1.0	1.8	-1.0	-5.2	28.3
1970 Cohort Black	1.4	.3	-2.0	1.0	-3.2	6.6

TABLE E-12

Impact of High School Curricula Expressed as Deviations from the Grand Mean of the Study Sample, Total Months Employed on the Longest Job Held since Leaving High School (con't.)

	Coop-erative	Academic	General	Vocational	Unde-termined	Grand Mean
All Cooperative Samples plus Non-cooperative Vocational Education Samples	1.1	---	---	-1.1	---	20.3
College Graduates	14.2	-3.4	16.4	-4.0	-7.7	17.9
California Mental Maturity IQ Less than 100	1.6	-5.8	1.2	-1.6	29.7	19.1
Those Who have had No Post High School Education	1.6	.8	-1.1	-1.1	3.2	19.0
Persons Who have Completed some Non-college Post High School Education	-.7	-7.1	1.9	2.2	---	22.8

APPENDIX TABLE E-13

EFFECT OF CURRICULUM STRUCTURE ON TOTAL MONTHS EMPLOYED, LONGEST JOB AFTER LEAVING HIGH SCHOOL

	Academic Credits	Vocational Credits	Cooperative Status	Cooperative Credits	Number of Obser- vations
Total Sample	-.19 (.17)	.80** (.27)	6.59* (2.59)	-.96* (.44)	368
Males	-.47 (.26)	.37 (.40)	14.00** (4.41)	-1.77* (.76)	391
Females	.07 (.22)	1.30** (.35)	3.05 (3.17)	-.84 (.52)	477
White Males	-.47 (.28)	.55 (.45)	16.27** (4.57)	-2.14** (.80)	338
White Females	.09 (.25)	1.40** (.40)	2.75 (3.40)	-.78 (.58)	389
Black Males	-.79 (.71)	-.62 (.83)	-32.92 (18.65)	4.73 (2.81)	53
Black Females	-.19 (.43)	1.54* (.68)	20.62* (9.73)	04.61** (1.51)	88
1966 Cohort Males	-1.00* (.46)	.06 (.69)	20.44** (7.03)	-2.87* (1.38)	217

APPENDIX TABLE E-13

Effect of Curriculum Structure on Total Months Employed, Longest Job after Leaving High School (continued)

	Academic Credits	Vocational Credits	Coopertive Status	Cooperative Credits	Number of Obser-vations
1970 Cohort Males	-.11 (.179)	.80** (.26)	-2.39 (3.60)	.19 (.54)	174
1966 Cohort Female	-.11 (.46)	1.73* (.76)	4.43 (5.24)	-.87 (.98)	217
1970 Cohort Female	.06 (.17)	.74** (.27)	.82 (3.36)	-.47 (.46)	260
1966 Cohort White	-.39 (.35)	1.03 (.55)	7.58 (4.30)	-.78 (.83)	372
1970 Cohort White	-.08 (.14)	.82** (.23)	.87 (2.61)	-.45 (.39)	355
1966 Cohort Black	-.66 (.80)	1.53 (1.30)	21.35 (15.44)	-7.06* (3.09)	62
1970 Cohort Black	**The equation could not be estimated due to collinearity among the variables**				

APPENDIX TABLE E-13

Effect of Curriculum Strucutre on Total Months Employed, Longest Job after Leaving High School (continued)

	Academic Credits	Vocational Credits	Cooperative Status	Cooperative Credits	Number of Obser- vations
All Cooperative Samples plus Non-cooperative Vocational Education Samples	.18 (.30)	1.32* (.55)	6.18 (3.92)	-1.00 (.68)	441
College Graduates	-.33 (.56)	.33 (1.09)	20.00* (9.36)	-1.05 (2.27)	119
Persons with California Mental Maturity IQ Less than 100	-.52 (.49)	-.05 (.62)	8.77 (7.15)	-1.06 (1.12)	155
Those Who have had No Post High School Education	.39 (.30)	.31 (.42)	3.11 (4.77)	-.38 (.71)	304
Persons Who have Completed some Non-college Post High School Education	-.30 (.65)	.84 (.81)	-8.70 (7.83)	1.32 (1.44)	117

APPENDIX Table E-14
DIFFERENCE IN TOTAL MONTHS EMPLOYED, LAST JOB SINCE LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL, EDUCATIONAL STUDENTS COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM STUDENTS

	Academic	General	Vocational	Undetermined	Number of Observations
Total Sample	-3.3** (1.3)	-3.3* (1.5)	-2.2 (1.3)	-2.4 (4.3)	868
Males	-4.6** (1.7)	-2.0 (2.3)	-3.1 (2.0)	3.9 (6.4)	391
Females	-2.6 (1.8)	-4.5* (1.9)	-1.5 (1.7)	-3.9 (5.6)	477
White Males	-4.8** (1.8)	-4.4 (2.5)	-3.1 (2.1)	4.5 (7.1)	377
White Females	-3.7 (2.0)	-4.7* (2.2)	-1.6 (1.9)	-3.0 (6.3)	389
Black Males	-2.1 (8.5)	15.8* (7.7)	1.8 (7.1)	13.8 (16.6)	54
Black Females	2.1 (4.9)	-1.1 (5.0)	2.6 (4.9)	-3.1 (13.1)	88
1966 Cohort Males	-5.4 (3.7)	1.6 (4.2)	-4.4 (3.6)	15.1 (12.9)	216
1970 Cohort Males	-3.1** (0.9)	-4.6** (1.5)	-1.2 (1.3)	-6.5 (3.7)	175
1966 Cohort Females	-3.4 (3.8)	-5.0 (4.4)	-2.6 (3.3)	4.6 (10.1)	217
1970 Cohort Females	-1.8 (1.2)	-2.1 (1.3)	-0.2 (1.3)	-12.1* (4.8)	260

APPENDIX TABLE E-14

Difference in Total Months Employed, Last Job after Leaving High School, Cooperative Vocational Educational Students Compared to Academic, General, Vocational and Undetermined Curriculum Students (continued)

	Academic	General	Vocational	Undetermined	Number of Observations
1966 Cohort White	-5.5 (2.8)	-4.0 (3.3)	-3.4 (2.6)	3.8 (8.4)	371
1970 Cohort White	-2.9** (0.8)	-2.8 (1.1)	-0.3 (1.0)	-8.9** (3.4)	355
1966 Cohort Black	6.9 (11.6)	14.7 (11.0)	8.2 (11.0)	2.9 (22.8)	62
1970 Cohort Black	-.8 (2.0)	-3.6 (2.2)	-1.1 (1.9)	-4.9 (5.3)	80
All Cooperative Samples plus Non-cooperative Vocational Educational Samples	---	---	-2.0 (1.5)	---	441
College Graduates	-3.5 (3.3)	-0.4 (5.4)	-7.1 (4.3)	-7.8 (8.6)	119
California Mental Maturity IQ Less than 100	-5.7 (5.7)	0.3 (4.0)	-3.8 (3.6)	14.0 (10.9)	155
Those Who have had No Post High School Education	-0.7 (2.2)	-3.0 (2.5)	-2.9 (2.1)	-2.0 (5.6)	304
Persons Who have Completed some Non-college Post High School Education	05.1 (5.1)	-1.6 (4.2)	-1.6 (3.8)	---	118

APPENDIX TABLE E-15

COEFFICIENTS OF DETERMINATION AND F-RATIOS OF TOTAL MONTHS EMPLOYED SINCE LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL EDUCATION STUDENTS COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM STUDENTS

	First Job		Longest Job		Last Job	
	R^2	F	R^2	F	R^2	F
Total Sample	.20	15.22	.40	41.06	.29	24.79
Males	.24	8.88	.51	30.13	.40	19.50
Females	.20	8.89	.38	21.42	.24	11.50
White Males	.23	8.02	.49	26.00	.41	18.70
White Females	.19	7.35	.35	17.17	.21	8.51
Black Males	.52	3.71	.75	10.21	.51	3.60
Black Females	.33	3.02	.58	8.77	.50	6.30
1966 Cohort Males	.24	4.95	.43	11.96	.36	8.80
1970 Cohort Males	.20	3.10	.26	4.30	.22	3.46
1966 Cohort Females	.14	2.44	.12	2.18	.14	2.48
1970 Cohort Females	.17	3.82	.25	6.20	.20	4.81
1966 Cohort White	.16	5.37	.24	8.70	.22	7.90
1970 Cohort White	.15	4.47	.21	6.87	.16	5.17
1966 Cohort Black	.36	2.12	.43	2.75	.31	1.69
1970 Cohort Black	.20	1.79	.28	2.37	.28	2.20
All Cooperative Samples plus Non-cooperative Vocational Education Samples	.20	10.42	.42	31.47	.28	16.72
College Graduates	.37	5.69	.32	4.63	.18	2.15

APPENDIX TABLE E-15

Coefficients of Determination and F-Ratios of Total Months Employed Since Leaving High School, Cooperative Vocational Education Students Compared to Academic, General Vocational and Undetermined Curriculum Students (continued)

	First Job		Longest Job		Last Job	
	R^2	F	R^2	F	R^2	F
Persons with California Mental Maturity IQ Less Than 100	.28	3.96	.54	11.61	.41	6.89
Those Who have had No Post High School Education	.26	7.39	.52	22.49	.39	13.29
Persons Who have Completed Some Non-college Post High School Education	.33	3.84	.42	5.83	.35	4.38

APPENDIX TABLE E-16

COEFFICIENTS OF DETERMINATION AND F-RATIOS OF EFFECT OF CURRICULUM STRUCTURE ON TOTAL MONTHS EMPLOYED SINCE LEAVING HIGH SCHOOL

	First Job		Longest Job		Last Job	
	R^2	F	R^2	F	R^2	F
Total Sample	.20	15.52	.41	41.70	.30	25.60
Males	.25	9.61	.51	29.93	.40	19.64
Females	.20	8.93	.39	22.66	.26	12.51
White Males	.25	9.23	.49	26.39	.41	19.06
White Females	.20	7.67	.37	18.50	.23	9.54
Black Males	.48	3.11	.75	9.91	.47	2.96
Black Females	.40	4.14	.62	10.02	.56	7.90
1966 Cohort Males	.23	4.74	.42	11.16	.36	8.65
1970 Cohort Males	.23	3.65	.28	4.75	.24	3.97
1966 Cohort Females	.14	2.59	.14	2.64	.15	2.69
1970 Cohort Females	.18	4.12	.26	6.65	.21	4.93
1966 Cohort White	.16	5.42	.24	8.53	.23	8.18
1970 Cohort White	.16	4.82	.22	7.50	.17	5.43
1966 Cohort Black	.37	2.18	.48	3.43	.37	2.20
1970 Cohort Black	.21	1.62	.27	2.28	.27	2.28
All Cooperative Samples plus Non-cooperative Vocational Education Samples	.23	8.84	.44	24.19	.31	13.72
College Graduates	.37	5.67	.24	3.14	.18	2.10
Persons with California Mental Maturity IQ Less Than 100	.30	4.35	.50	10.15	.39	6.38

APPENDIX TABLE E-16

Coefficients of Determination and F-Ratios of Effect of Curriculum Structure on Total Months Employed Since Leaving High School (continued)

	First Job		Longest Job		Last Job	
	R^2	F	R^2	F	R^2	F
Those Who Have Had No Post High School Education	.26	7.36	.52	22.48	.40	13.49
Persons Who have Completed Some Non-college Post High School Education	.30	3.12	.42	5.34	.36	4.02

APPENDIX TABLE E-17

DIFFERENCE IN TOTAL MONTHS ELAPSED BETWEEN LEAVING HIGH SCHOOL AND ACQUIRING FIRST JOB LASTING ONE MONTH OR LONGER

	Academic	General	Vocational	Undetermined	Number of Observations
Total Sample	0.1 (1.0)	1.3 (1.2)	-0.3 (1.1)	4.8 (3.4)	868
Males	-0.6 (1.5)	-0.4 (2.0)	-0.9 (1.7)	-0.3 (5.5)	391
Females	1.2 (1.4)	3.1* (1.5)	0.1 (1.4)	7.2 (4.4)	477
White Males	-0.7 (1.5)	-2.3 (2.1)	-1.9 (1.8)	0.9 (5.9)	337
White Females	1.9 (1.6)	2.5 (1.7)	-0.1 (1.5)	5.2 (5.0)	389
Black Males	1.1 (8.8)	10.5 (7.9)	9.1 (7.3)	1.7 (17.1)	54
Black Females	0.6 (3.4)	5.2 (3.5)	1.4 (3.5)	26.7** (9.2)	88
1966 Cohort Males	-2.7 (3.1)	-3.2 (3.5)	-3.3 (3.0)	-4.8 (10.8)	216
1970 Cohort Males	0.9 (0.8)	0.2 (1.2)	-0.1 (1.0)	5.0 (3.0)	175
1966 Cohort Females	-0.1 (3.0)	9.1** (3.4)	-0.6 (2.6)	7.0 (7.9)	217
1970 Cohort Females	2.5* (1.0)	0.8 (1.1)	0.9 (1.0)	3.8 (4.0)	260
1966 Cohort White	-0.7 (2.3)	0.9 (2.7)	-2.7 (2.1)	4.4 (6.8)	371

APPENDIX TABLE E-17

Difference in Total Months Elapsed between Leaving High School and Acquiring First Job Lasting One Month or Longer (continued)

	Academic	General	Vocational	Undetermined	Number of Observations
1970 Cohort White	1.6* (0.7)	-0.1 (0.9)	0.6 (0.8)	5.9 (2.7)	355
1966 Cohort Black	-4.2 (8.2)	6.3 (7.8)	5.0 (7.8)	23.9 (16.1)	62
1970 Cohort Black	.8 (1.8)	1.5 (2.0)	-.6 (1.7)	1.7 (4.8)	80
All Cooperative Samples plus Non-cooperative Vocational Educational Samples	---	---	-0.3 (1.2)	---	441
College Graduates	-1.7 (4.2)	-0.3 (6.9)	-5.1 (5.4)	7.1 (10.9)	119
California Mental Maturity IQ Less than 100	-4.0 (4.9)	2.7 (3.5)	3.6 (3.1)	-4.3 (9.4)	155
Those Who have had No Post High School Education	0.2 (1.3)	3.3* (1.4)	2.2 (1.2)	6.5 (3.2)	304
Persons Who have Completed some Non-college Post High School Education	-3.6 (4.6)	-1.6 (3.9)	-6.5 (3.5)	---	118

APPENDIX TABLE E-18

DIFFERENCE IN TOTAL NUMBER OF MONTHS EMPLOYED SINCE LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL EDUCATION STUDENTS COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM STUDENTS

	Academic	General	Vocational	Undetermined	Number of Observations
Total Sample	-5.3** (1.3)	-3.7* (1.6)	-2.4 (1.4)	-6.8 (4.5)	868
Males	-5.6** (1.7)	-0.6 (2.3)	-0.6 (2.0)	-6.3 (6.4)	391
Females	-6.3** (1.9)	-6.1** (2.1)	-4.1* (1.8)	-3.4 (5.9)	477
White Males	-6.4** (1.8)	0.3 (2.5)	1.0 (2.1)	-8.4 (7.1)	337
White Females	-8.2** (2.1)	-6.6** (2.3)	-4.8* (2.0)	0.6 (6.6)	389
Black Males	-0.3 (6.5)	-6.7 (5.9)	-9.0 (5.4)	-3.8 (12.7)	54
Black Females	4.5 (5.5)	3.2 (5.6)	6.0 (5.5)	-17.3 (14.7)	88
1966 Cohort Males	-11.2** (3.6)	-0.4 (4.1)	-2.2 (3.5)	-13.1 (12.6)	216
1970 Cohort Males	-1.8 (0.9)	-0.5 (1.5)	0.7 (1.2)	-6.5 (3.5)	175
1966 Cohort Females	-8.4* (4.1)	-10.7* (4.6)	-6.6 (3.5)	2.8 (10.6)	217
1970 Cohort Females	-3.5** (1.3)	-1.1 (1.4)	-0.3 (1.3)	4.7 (5.2)	260
1966 Cohort White	-12.4** (2.9)	-6.2 (3.4)	-4.4 (2.6)	-6.1 (8.6)	371

APPENDIX TABLE E-18

Difference in Total Number of Months Employed since Leaving High School, Cooperative Vocational Education Students Compared to Academic, General, Vocational and Undetermined Curriculum Students (continued)

	Academic	General	Voca-tional	Undeter-mined	Number of Obser-vations
1970 Cohort White	-2.2** (0.9)	0.5 (1.2)	0.3 (1.1)	0.6 (3.5)	355
1966 Cohort Black	13.2 (10.0)	5.5 (9.5)	2.3 (9.4)	-3.7 (19.6)	62
1970 Cohort Black	-2.2 (2.1)	-6.1** (2.3)	-1.6 (2.0)	-8.6 (5.6)	80
All Cooperative Samples plus Non-Cooperative Vocational Educational Samples	---	---	-2.5 (1.5)	---	441
College Graduates	-15.3** (5.2)	4.3 (3.5)	-14.7* (6.7)	-27.5* (13.4)	119
California Mental Maturity IQ Less than 100	-5.6 (5.0)	-6.1 (3.5)	-5.7 (3.1)	5.5 (9.6)	155
Those Who have had No Post High School Education	-1.5 (2.0)	-5.1* (2.3)	-5.6** (1.9)	-3.7 (5.1)	304
Persons Who have Completed some Non-college Post High School Education	-8.0 (5.2)	00.5 (4.3)	5.9 (3.9)	---	118

APPENDIX TABLE E-19
IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, TOTAL MONTHS EMPLOYED SINCE LEAVING HIGH SCHOOL

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
Total Sample	3.0	-2.3	-.7	.6	-3.8	24.6
Males	2.1	-3.5	1.6	1.6	-4.2	26.2
Females	4.0	-2.3	-2.1	-.1	.6	23.4
White Males	2.0	-4.4	2.2	2.9	-6.4	26.8
White Females	4.6	-3.7	-2.0	-.2	5.2	23.7
Black Males	5.4	5.1	-1.3	-3.6	1.6	22.4
Black Females	-4.0	.5	-.7	2.1	-21.4	22.0
1966 Cohort Males	1.0	-.2	1.3	-1.2	-12.2	38.5
1970 Cohort Males	.5	-1.2	-.0	1.3	-6.0	10.9
1966 Cohort Females	5.4	-3.0	-5.4	-1.2	8.1	38.5
1970 Cohort Females	1.4	-2.1	.2	1.0	6.0	10.8
1966 Cohort White	5.7	-6.7	-.5	1.3	-.3	38.3
1970 Cohort White	.6	-1.7	1.0	.9	1.2	11.3
1966 Cohort Black	-4.2	9.0	-9.8	-1.4	-8.0	39.6
1970 Cohort Black	2.9	.7	-3.2	1.3	-5.7	8.6

APPENDIX TABLE E-19

Impact of High School Curricula Expressed as Deviations from the Grand Mean of the Study Sample, Total Months Employed Since Leaving High School (continued)

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
All Cooperative Samples plus Non-cooperative Vocational Education Samples	1.3	---	---	-1.3	---	27.6
College Graduates	12.2	-3.0	16.5	-2.4	-15.2	30.0
California Mental Maturity IQ Less than 100	4.5	-1.1	-1.6	-1.3	10.0	25.4
Those Who have had No Post High School Education	3.4	1.9	-1.8	-2.3	-.3	23.6
Persons Who have Completed some Non-college Post High School Education	-.7	-8.7	-1.1	5.2	---	33.8

APPENDIX TABLE E-20

EFFECT OF CURRICULUM STRUCTURE ON TOTAL MONTHS EMPLOYED SINCE LEAVING HIGH SCHOOL

	Academic Credits	Vocational Credits	Cooperative Status	Cooperative Credits	Number of Obser-vations
Total Sample	.04 (.19)	1.13** (.30)	5.76* (2.87)	-.89 (.48)	868
Males	-.21 (.29)	1.06* (.43)	11.76* (4.78)	-1.92* (.82)	391
Females	.22 (.25)	1.24 (.40)	3.28 (3.57)	-.48 (.59)	477
White Males	-.22 (.31)	1.46** (.49)	13.18** (4.96)	-2.34** (.87)	338
White Females	.16 (.28)	1.40** (.45)	3.72 (3.79)	-.50 (.64)	389
Black Males	-.32 (.71)	-.55 (.83)	-15.81 (18.72)	2.94 (2.82)	53
Black Females	.18 (.50)	1.32 (.79)	19.35 (11.27)	-4.59 (1.75)**	88
1966 Cohort Males	-.36 (.50)	1.59* (.75)	16.59* (7.69)	-2.92 (1.50)	217

APPENDIX TABLE E-20

Effect of Curriculum Structure on Total Months Employed since Leaving High School (continued)

	Academic Credits	Vocational Credits	Cooperative Status	Cooperative Credits	Number of Obser- vations
1970 Cohort Males	-.27 (.18)	.51 (.27)	-2.69 (3.72)	.13 (.56)	174
1966 Cohort Females	.10 (.52)	1.80* (.86)	4.90 (5.87)	-.31 (1.10)	217
1970 Cohort Females	.02 (.19)	.50 (.39)	-.19 (3.66)	-.11 (.51)	260
1966 Cohort White	.06 (.38)	2.04** (.60)	5.97 (4.69)	-.67 (.90)	372
1970 Cohort White	-.13 (.15)	.43 (.24)	-1.74 (2.83)	.06 (.42)	355
1966 Cohort Black	.06 (.81)	.30 (1.31)	24.20 (15.59)	-7.22* (3.12)	62
1970 Cohort Black	**The equation could not be estimated due to collinearity among the variables**				
All Cooperative Samples plus Non-cooperative Vocational Education Samples	.36 (.33)	1.41* (.60)	4.23 (4.27)	-.70 (.74)	441

APPENDIX TABLE E-20

Effect of Curriculum Structure on Total Months Employed since Leaving High School (continued)

	Academic Credits	Vocational Credits	Cooperative Status	Cooperative Credits	Number of Observations
College Graduates	.37 (.73)	1.73 (1.43)	16.40 (12.26)	-1.43 (2.97)	117
Persons with California Mental Maturity IQ Less than 100	.28 (.48)	.44 (.60)	13.45 (6.86)	-1.42 (1.07)	155
Persons Who have had No Post High School Education	.68 (.31)	.09 (.44)	6.15 (4.94)	-.29 (.73)	304
Persons Who have Completed Some Noncollege Post High School Education	-.26 (.71)	2.35 (.38)	-9.98 (8.55)	.79 (1.57)	117

APPENDIX TABLE E-21

DIFFERENCE IN PERCENT OF TIME UNEMPLOYED SINCE LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL EDUCATION STUDENTS COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM STUDENTS

	Academic	General	Vocational	Undetermined	Number of Observations
Total Sample	0.060** (0.020)	0.061 (0.024)	-0.006 (0.021)	-0.028 (0.065)	868
Males	0.062* (0.026)	0.080* (0.035)	-0.002 (0.030)	-0.165 (0.088)	391
Females	0.059 (0.032)	0.048 (0.033)	-0.004 (0.030)	0.094 (0.095)	477
White Males	0.059 (0.026)	0.037 (0.036)	-0.014 (0.031)	-0.135 (0.091)	337
White Females	0.059 (0.032)	0.015 (0.034)	-0.010 (0.030)	0.135 (0.095)	389
Black Males	0.216 (0.130)	0.368** (0.125)	0.224 (0.117)	-0.295 (0.277)	54
Black Females	0.111 (0.113)	0.178 (0.113)	0.088 (0.109)	0.163 (0.343)	88
1966 Cohort Males	0.030 (0.027)	0.062* (0.030)	0.013 (0.026)	-0.043 (0.080)	216
1970 Cohort Males	0.090* (0.042)	0.090 (0.065)	-0.019 (0.056)	-0.241 (0.151)	175
1966 Cohort Females	0.064* (0.026)	0.051 (0.029)	0.030 (0.022)	0.159* (0.068)	217
1970 Cohort Females	0.070 (0.051)	0.019 (0.052)	-0.053 (0.051)	0.096 (0.175)	260
1966 Cohort White	0.043* (0.019)	0.046* (0.021)	0.013 (0.017)	0.089 (0.053)	371

APPENDIX TABLE E-21

Difference in Percent of Time Unemployed since Leaving High School, Cooperative Vocational Education Students Compared to Academic, General, Vocational and Undetermined Curriculum Students (continued)

	Academic	General	Vocational	Undetermined	Number of Observations
1970 Cohort White	0.043* (0.019)	0.046* (0.021)	0.013 (0.017)	0.089 (0.053)	371
1966 Cohort Black	0.098 (0.098)	0.178* (0.088)	0.143 (0.088)	0.154 (0.186)	62
1970 Cohort Black	**0.19** **(0.12)**	**0.33*** **(0.12)**	**0.15** **(0.11)**	**-0.36** **(0.35)**	**110**
All Cooperative Samples plus Non-cooperative Vocational Educational Samples	---	---	.001 (.021)	---	493
College Graduates	0.007 (0.041)	-0.033 (0.062)	0.015 (0.052)	-0.047 (0.106)	119
California Mental Maturity IQ Less than 100	-0.005 (0.098)	0.140* (0.068)	0.041 (0.062)	-0.109 (0.196)	155
Those Who have had No Post High School Education	0.033 (0.042)	0.068 (0.045)	-0.012 (0.039)	-0.038 (0.096)	304
Persons Who have Completed some Non-college Post High School Education	0.041 (0.050)	0.067 (01040)	0.081* (0.039)	---	118

APPENDIX TABLE E-22

COEFFICIENTS OF DETERMINATION AND F-RATIOS OF SELECTED INDICES OF LABOR MARKET PERFORMANCE, COOPERATIVE VOCATIONAL EDUCATION STUDENTS COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM STUDENTS

	First Job Lasting One Month or Longer		Total Number of Months Employed Since Leaving High School		Percentage of Time Unemployed Since Leaving High School	
	R^2	F	R^2	F	R^2	F
Total Sample	.07	4.83	.53	69.93	.19	16.28
Males	.04	1.31	.61	44.43	.18	6.78
Females	.15	6.06	.54	41.00	.22	10.63
White Males	.05	1.40	.60	41.17	.12	3.98
White Females	.16	5.86	.52	33.34	.12	4.62
Black Males	.15	0.62	.80	12.65	.56	4.65
Black Females	.31	2.83	.71	15.65	.37	4.43
1966 Cohort Males	.08	1.38	.41	10.90	.09	1.68
1970 Cohort Males	.16	2.33	.33	6.20	.19	3.61
1966 Cohort Females	.10	1.70	.13	2.43	.12	2.26
1970 Cohort Males	.09	1.90	.23	5.70	.19	5.69
1966 Cohort White	.03	1.00	.22	7.94	.06	1.86

APPENDIX TABLE E-22

Coefficients of Determination and F Ratios of Selected Indices of Labor Market Performance, Cooperative Vocational Education Students Compared to Academic, General, Vocational and Undetermined Curriculum Stduents (continued)

	First Job Lasting One Month or Longer		Total Number of Months Employed Since Leaving High School		Percentage of Time Unemployed Since Leaving High School	
	R^2	F	R^2	F	R^2	F
1970 Cohort White	.10	2.96	.20	6.61	.08	3.16
1966 Cohort Black	.42	2.63	.56	4.62	.29	1.73
1970 Cohort Black	.33	2.73	.38	3.45	.37	5.13
All Cooperative Samples plus Non-cooperative Vocational Education Samples	.05	1.74	.57	46.68	.17	8.00
College Graduates	.10	1.14	.22	2.69	.12	1.38
Persons with California Mental Maturity IQ Less Than 100	.15	1.77	.66	19.15	.31	5.16
Those Who have had No Post High School Education	.17	4.08	.63	34.44	.19	5.77
Persons Who have Completed Some Non-college Post High School Education	.11	1.00	.54	9.49	.40	5.81

APPENDIX TABLE E-23

COEFFICIENTS OF DETERMINATION AND F-RATIOS OF EFFECT OF CURRICULUM STRUCTURE ON SELECTED INDICES OF LABOR MARKET PERFORMANCE

	First Job Lasting One Month or Longer		Total Number of Months Employed Since Leaving High School		Percentage of Time Unemployed Since Leaving High School	
	R^2	F	R^2	F	R^2	F
Total Sample	.10	6.50	.54	71.52	.18	15.75
Males	.05	1.48	.61	44.81	.16	5.65
Females	.19	8.22	.55	42.69	.22	10.94
White Males	.06	1.56	.60	41.12	.10	3.14
White Females	.21	8.12	.53	35.04	.13	5.12
Black Males	.12	0.46	.80	13.05	.52	3.80
Black Females	.29	2.59	.73	16.99	.36	4.32
1966 **Cohort Males**	.08	1.36	.41	10.74	.08	1.49
1970 **Cohort Males**	.18	2.75	.34	6.27	.15	2.78
1966 **Cohort Females**	.18	3.51	.16	2.93	.11	2.13
1970 **Cohort Females**	.10	2.13	.22	5.40	.20	5.88
1966 **Cohort White**	.08	2.34	.24	8.88	.05	1.67
1970 **Cohort White**	.10	3.08	.20	6.48	.07	2.74

APPENDIX TABLE E-23

Coefficients of Determination and F-Ratios of Effect of Curriculum Structure on Selected Indices of Labor Market Performance (continued)

	First Job Lasting One Month or Longer		Total Number of Months Employed Since Leaving High School		Percentage of Time Unemployed Since Leaving High School	
	R^2	F	R^2	F	R^2	F
1966 Cohort Black	.35	2.03	.58	5.14	.28	1.72
1970 Cohort Black	.33	2.95	.34	3.08	.36	5.06
All Cooperative Samples plus Non-cooperative Vocational Education Samples	.09	3.01	.57	40.99	.18	7.35
College Graduates	.12	1.27	.17	1.99	.12	1.41
Persons with California Mental Maturity IQ Less Than 100	.14	1.67	.66	19.29	.30	4.96
Those Who have had No Post High School Education	.23	6.22	.63	34.79	.19	5.55
Persons Who have Completed some Non-college Post High School Education	.16	1.35	.57	9.63	.41	5.49

APPENDIX TABLE E-24

DIFFERENCE IN AVERAGE HOURLY WAGE RATE, FIRST JOB AFTER LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL CURRICULUM COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM

	Academic	General	Vocational	Undetermined	Number of Observations
Total Sample	-0.36** (0.09)	-0.39** (0.11)	-0.21* (0.10)	-0.75** (0.29)	911
Males	-0.49** (0.14)	-0.47* (0.19)	-0.33* (0.17)	-1.20** (0.45)	397
Females	-0.23 (0.13)	-0.29* (0.13)	-0.08 (0.12)	-0.09 (0.38)	514
White Males	-0.44** (0.15)	-0.43* (0.20)	-0.30 (0.18)	-1.26* (0.49)	347
White Females	-0.14 (0.14)	-0.34* (0.15)	-0.10 (0.13)	-0.57 (0.42)	409
Black Males	-1.47 (0.78)	-1.19 (0.70)	-0.91 (0.66)	-1.40 (1.44)	50
Black Females	-0.37 (0.38)	0.08 (0.39)	0.10 (0.37)	1.56 (1.11)	105
1966 Cohort Males	-0.88** (0.24)	-0.63* (0.26)	-0.44 (0.23)	-1.62* (0.65)	195
1970 Cohort Males	-0.30 (0.17)	-0.71 (0.27)	-0.51 (0.23)	-0.99 (0.61)	202
1966 Cohort Females	-0.19 (0.21)	-0.46* (0.22)	-0.28 (0.17)	-0.01 (0.52)	212
1970 Cohort Females	-0.28 (0.17)	-0.13 (0.17)	0.10 (0.17)	-0.36 (0.59)	302
1966 Cohort White	-0.44** (0.16)	-0.63** (0.18)	-0.34* (0.15)	-1.16** (0.44)	352

APPENDIX TABLE E-24

Difference in Average Hourly Wage Rate, First Job After Leaving High School, Cooperative Vocational Curriculum Compared to Academic, General, Vocational and Undetermined Curriculum (continued)

	Academic	General	Vocational	Undetermined	Number of Observations
1970 Cohort White	-0.23 (0.13)	-0.31 (0.17)	-0.14 (0.16)	-0.98 (0.45)	404
1966 Cohort Black	-1.28* (0.60)	-0.39 (0.55)	-0.86 (0.56)	1.04 (1.06)	55
1970 Cohort Black	-0.79 (0.41)	-0.79 (0.42)	-0.45 (0.38)	-0.65 (1.17)	100
All Cooperative Samples plus Noncooperative Vocational Education Samples	---	---	-.28 (.22)	---	461
College Graduates	-0.20 (0.28)	-0.59 (0.44)	-0.09 (0.35)	0.53 (0.67)	110
Persons with California Mental Maturity IQ Less than 100	-0.59 (0.38)	-0.45 (0.25)	-0.37 (0.23)	-0.79 (0.70)	161
Those Who have had No Post High School Education	-0.06 (0.16)	-0.44** (0.17)	-0.16 (0.15)	-0.92 (0.36)	336
Persons Who have Completed Some Noncollege Post High School Education	-1.07** (0.35)	-0.57 (0.30)	-0.07 (0.29)	---	108

APPENDIX TABLE E-25

DIFFERENCE IN AVERAGE HOURLY WAGE RATE, LONGEST JOB AFTER LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL CURRICULUM COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM

	Academic	General	Vocational	Undetermined	Number of Observations
Total Sample	-0.28** (0.10)	-0.38** (0.12)	-0.17 (0.11)	-0.79* (0.31)	911
Males	-0.43** (0.15)	-0.43* (0.20)	-0.11 (0.17)	-0.96* (0.48)	397
Females	-0.15 (0.14)	-0.32* (0.14)	-0.19 (0.13)	-0.35 (0.41)	514
White Males	-0.42** (0.15)	-0.39 (0.22)	0.01 (0.19)	-0.99 (0.51)	347
White Females	-0.19 (0.15)	-0.39* (0.16)	-0.17 (0.14)	-0.69 (0.45)	409
Black Males	-1.43 (0.74)	-1.54* (0.67)	-1.34* (1.37)	-1.71 (0.63)	50
Black Females	-0.01 (0.44)	0.16 (0.44)	0.04 (0.42)	0.52 (1.[illegible]7)	105
1966 Cohort Males	-0.36 (0.27)	-0.25 (0.29)	0.04 (0.26)	-0.94 (0.73)	195
1970 Cohort Males	-0.[illegible]6 (0.18)	-0.84 (0.28)	-0.41 (0.24)	-1.03 (0.62)	100
1966 Cohort Females	-0.01 (0.23)	-0.58 (0.24)	-0.38* (0.19)	-0.36 (0.58)	212
1970 Cohort Females	-0.31 (0.17)	-0.09 (0.18)	0.05 (0.17)	-0.47 (0.61)	302

APPENDIX TABLE E-25

Difference in Average Hourly Wage Rate, Longest Job After Leaving High School, Cooperative Vocational Curriculum Compared to Academic, General, Vocational and Undetermined Curriculum (continued)

	Academic	General	Vocational	Undetermined	Number of Observations
1966 Cohort Whites	-0.25 (0.18)	-0.55** (0.20)	-0.10 (0.16)	-0.91 (0.49)	352
1970 Cohort Whites	-0.35** (0.13)	-0.39* (0.17)	-0.12 (0.16)	-1.11* (0.46)	404
1966 Cohort Black	-0.01 (0.74)	-0.27 (0.68)	-1.07 (0.70)	0.82 (1.30)	55
1970 Cohort Black	-0.76 (0.43)	-0.74 (0.45)	-0.44 (0.40)	-0.63 (1.23)	100
All Cooperative Samples plus Noncooperative Vocational Education Samples	---	---	-0.16 (0.22)	---	453
College Graduates	-0.11 (0.41)	0.00 (0.64)	-0.17 (0.51)	-0.19 (0.98)	110
Persons with California Mental Maturity IQ Less Than 100	0.10 (0.41)	0.24 (0.28)	-0.20 (0.25)	-1.10 (0.77)	161
Those Who have had No Post High School Education	-0.22 (0.17)	-0.55** (0.18)	-0.18 (0.15)	-0.94* (0.38)	336
Persons Who have Completed Some Noncollege Post High School Education	-0.41 (0.37)	-0.34 (0.32)	0.00 (0.30)	---	1-8

APPENDIX TABLE E-26

IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, AVERAGE HOURLY WAGE RATE ON LONGEST JOB SINCE LEAVING HIGH SCHOOL

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
Total Sample	.21	-.07	-.16	.04	-.58	2.21
Males	.26	-.17	-.17	.15	-.70	2.56
Females	.16	.00	-.16	-.03	-.20	1.95
White Males	.23	-.19	-.17	.21	-.76	2.54
White Females	.17	-.02	-.22	-.00	-.53	1.98
Black Males	1.29	-.14	-.25	-.05	-.42	2.64
Black Females	-.07	-.08	.10	-.02	.45	1.84
1966 Cohort Males	.17	-.19	-.08	.21	-.77	3.18
1970 Cohort Males	.42	-.04	-.42	.01	-.62	1.96
1966 Cohort Females	.18	.17	-.40	-.20	-.18	2.43
1970 Cohort Females	.10	-.20	.01	.16	-.37	1.61
1966 Cohort White	.19	-.06	-.36	.09	-.71	2.75
1970 Cohort White	.23	-.12	-.16	.11	-.88	1.79
1966 Cohort Black	.38	.37	.11	-.69	1.20	3.01
1970 Cohort Black	.54	-.22	-.21	.10	-.09	1.59

APPENDIX TABLE E-26

Impact of High School Curricula Expressed as Deviations from the Grand Mean of the Study Sample, Average Hourly Wage Rate on Longest Job Since Leaving High School (continued)

	Coop-erative	Academic	General	Vocational	Unde-termined	Grand Mean
All Cooperative Samples plus Non-cooperative Vocational Education Samples	.08	---	---	-.08	---	2.38
College Graduates	.10	-.01	.10	-.06	-.09	2.58
California Mental Maturity IQ Less Than 100	.16	.27	-.08	-.04	-.94	2.25
Those Who have had No Post High School Education	.25	.03	-.30	.07	-.69	2.16
Persons Who have Completed Some Non-college Post High School Education	.15	-.26	-.19	.15	---	2.67

APPENDIX TABLE E-27

ANALYSIS OF CURRICULUM STRUCTURE, AVERAGE HOURLY WAGE RATE, LONGEST JOB AFTER LEAVING HIGH SCHOOL

	Academic Credits	Vocational Credits	Cooperative Credits	Cooperative Status	Number of Observations
Total Sample	0.03* (0.01)	0.08** (0.02)	-0.02 (0.04)	0.13 (0.22)	911
Males	0.02 (0.02)	0.16** (0.04)	-0.02 (0.07)	0.02 (0.41)	397
Females	0.04** (0.02)	0.02 (0.03)	0.02 (0.04)	0.04 (0.26)	514
White Males	0.02 (0.02)	0.18** (0.04)	-0.04 (0.07)	0.08 (0.42)	348
White Females	0.05** (0.02)	0.06* (0.03)	-0.04 (0.05)	0.28 (0.27)	409
Black Males	-0.02 (0.09)	0.11 (0.09)	0.16 (0.31)	-0.26 (2.15)	49
Black Females	0.03 (0.04)	-0.09 (0.07)	0.20 (0.17)	-1.00 (1.20)	105
1966 Cohort Males	0.03 (0.03)	0.14** (0.05)	-0.05 (0.11)	0.16 (0.55)	196
1970 Cohort Males	0.06* (0.03)	0.16** (0.05)	-0.04 (0.10)	0.45 (0.66)	211
1966 Cohort Females	0.06 (0.03)	0.01 (0.05)	-0.02 (0.06)	0.36 (0.34)	212
1970 Cohort Females	-0.00 (0.03)	0.04 (0.04)	0.05 (0.06)	-0.52 (0.46)	302
1966 Cohort Whites	0.05 (0.02)	0.10 (0.04)	-0.08 (0.06)	0.46 (0.30)	353
1970 Cohort Whites	0.04 (0.02)	0.14** (0.04)	-0.06 (0.06)	0.15 (0.40)	404

APPENDIX TABLE E-27

Analysis of Curriculum Structure, Average Hourly Wage Rate, Longest Job after Leaving High School (continued)

	Academic Credits	Vocational Credits	Cooperative Credits	Cooperative Status	Number of Observations
1966 Cohort Black	0.07 (0.05)	-0.19 (0.09)	-0.03 (0.23)	1.06 (1.29)	55
1970 Cohort Black	-0.01 (0.05)	0.03 (0.06)	0.33 (0.24)	-0.19 (1.78)	99
All Cooperative Samples plus Noncooperative Vocational Education Samples only	0.04** (0.02)	0.06 (0.04)	0.00 (0.06)	-0.00 (0.32)	453
College Graduates	0.06 (0.06)	0.03 (0.10)	0.13 (0.24)	-0.49 (1.08)	110
Persons with California Mental Maturity IQ Less than 100	0.05 (0.04)	0.02 (0.05)	0.13* (0.08)	-0.69 (0.54)	161
Those Who have had No Post High School Education	0.05* (0.02)	0.10** (0.03)	-0.01 (0.06)	-0.03 (0.39)	336
Persons Who have Completed some Post High School Education	0.03 (0.05)	0.14 (0.07)	-0.09 (0.12)	0.21 (0.68)	107

APPENDIX TABLE E-28

DIFFERENCE IN AVERAGE HOURLY WAGE RATE, LAST JOB AFTER LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL CURRICULUM COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM

	Academic	General	Vocational	Undetermined	Number of Observations
Total Sample	-0.28** (0.10)	-0.41** (0.12)	-0.11 (0.11)	-0.78* (0.32)	911
Males	-0.45** (0.15)	-0.44* (0.21)	-0.01 (0.18)	-0.96 (0.49)	397
Females	-0.12 (0.14)	-0.36* (0.15)	-0.17 (0.13)	-0.35 (0.43)	414
White Males	-0.45** (0.16)	-0.42 (0.23)	0.04 (0.20)	-1.01 (0.54)	347
White Females	-0.19 (0.15)	-0.45** (0.16)	-0.14 (0.14)	-0.54 (0.47)	409
Black Males	-1.02 (0.75)	-1.15 (0.68)	-0.49 (0.63)	-1.26 (1.39)	50
Black Females	0.18 (0.42)	0.21 (0.42)	0.09 (0.40)	-0.15 (1.21)	105
1966 Cohort Males	-0.40 (0.27)	-0.07 (0.30)	0.23 (0.27)	-0.84 (0.75)	195
1970 Cohort Males	-0.48 (0.18)	-0.01 (0.28)	-0.39 (0.24)	-1.13 (0.63)	202
1966 Cohort Females	0.04 (0.24)	-0.80** (0.25)	-0.38 (0.20)	-0.68 (0.60)	212
1970 Cohort Females	-0.30 (0.18)	-0.07 (0.19)	0.07 (0.18)	0.04 (0.63)	302
1966 Cohort Whites	-0.27 (0.19)	-0.57** (0.22)	-0.06 (0.18)	-0.96 (0.52)	352

APPENDIX TABLE E-28

Difference in Average Hourly Wage Rate, Last Job After Leaving High School, Cooperative Vocational Curriculum Compared to Academic, General, Vocational and Undetermined Curriculum (continued)

	Academic	General	Vocational	Undetermined	Number of Observations
1970 Cohort Whites	-0.36** (0.14)	-0.47** (0.18)	-0.12 (0.17)	-0.91 (0.48)	404
1966 Cohort Black	1.09 (0.74)	0.57 (0.68)	0.06 (0.70)	1.11 (1.30)	55
1970 Cohort Black	-0.75 (0.44)	-0.72 (0.46)	-0.32 (0.41)	-0.66 (1.24)	100
All Cooperative Samples plus Noncooperative Vocational Education Samples	---	---	-.15 (.11)	---	461
College Graduates	-0.23 (0.45)	0.14 (0.69)	-0.51 (0.55)	-0.53 (1.06)	110
Persons with California Mental Maturity IQ Less than 100	-0.34 (0.41)	-0.35 (0.28)	-0.16 (0.28)	-0.47 (0.76)	161
Those Who have had No Post High School Education	-0.22 (0.17)	-0.56** (0.19)	-0.16 (0.16)	-0.91* (0.38)	336
Persons Who have Completed Some Noncollege Post High School Education	-0.55 (0.34)	-0.37 (0.30)	0.15 (0.28)	---	108

APPENDIX TABLE E-29
COEFFICIENTS OF DETERMINATION AND F-RATIO OF AVERAGE HOURLY WAGE RATE FOR THE FIRST, LAST AND LONGEST JOBS SINCE LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL CURRICULUM COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM

	First Job		Longest Job		Last Job	
	R^2	F	R^2	F	R^2	F
Total Sample	.14	9.39	.24	19.27	.27	22.36
Males	.14	4.63	.29	10.98	.30	11.55
Females	.10	4.12	.16	7.04	.25	11.99
White Males	.15	4.43	.29	10.32	.30	10.85
White Females	.10	3.42	.15	5.40	.23	9.19
Black Males	.22	.80	.44	2.15	.44	2.15
Black Females	.20	1.71	.32	3.31	.42	5.03
1966 Males	.15	2.78	.10	1.71	.09	1.56
1970 Males	.20	4.34	.20	4.06	.21	4.48
1966 Females	.07	1.19	.07	1.13	.15	2.61
1970 Females	.08	1.85	.07	1.63	.07	1.67
1966 White	.14	4.06	.16	4.99	.12	3.58
1970 White	.08	2.53	.09	2.86	.09	3.02
1966 Black	.50	3.14	.37	1.82	.33	1.54
1970 Black	.20	2.21	.15	1.43	.17	1.51
All Cooperative Samples Plus Non-cooperative Vocational Education Samples	.15	5.86	.24	10.95	.26	12.01
College Graduates	.14	1.30	.10	.89	.05	.42

APPENDIX TABLE E-29

Coefficients of Determination and F-Ratio of Average Hourly Wage Rate for the First, Last and Longest Jobs since Leaving High School, Cooperative Vocational Curriculum Compared to Academic, General, Vocational and Undetermined Curriculum (continued)

	First Job		Longest Job		Last Job	
	R^2	F	R^2	F	R^2	F
Persons with California Mental Maturity IQ Less Than 100	.27	3.65	.37	5.69	.42	6.97
Those Who Have Had No Post High School Education	.18	4.72	.26	7.62	.27	7.71
Persons Who have Completed Some Non-college Post High School Education	.30	2.89	.35	3.64	.44	5.28

APPENDIX TABLE E-30

COEFFICIENTS OF DETERMINATION AND F-RATIOS OF CURRICULUM STRUCTURE, AVERAGE HOURLY WAGE RATE, FOR THE FIRST, LONGEST AND LAST JOB SINCE LEAVING HIGH SCHOOL

	First Job		Longest Job		Last Job	
	R^2	F	R^2	F	R^2	F
Total Sample	.15	10.29	.25	20.21	.28	22.97
Males	.19	6.36	.32	12.99	.33	13.33
Females	.10	4.00	.17	7.30	.25	12.06
White Males	.20	6.03	.32	12.22	.33	12.40
White Females	.11	3.69	.16	5.71	.24	9.37
Black Males	.27	1.01	.47	2.42	.52	2.89
Black Females	.17	1.46	.34	3.56	.44	5.39
1966 Males	.20	2.90	.12	2.15	.09	1.52
1970 Males	.53	6.81	.28	6.10	.28	6.06
1966 Females	.07	1.22	.07	1.11	.13	2.23
1970 Females	.08	1.80	.07	1.63	.07	1.69
1966 White	.14	4.30	.17	5.35	.12	3.50
1970 White	.12	3.97	.12	4.03	.12	4.27
1966 Black	.42	2.32	.37	1.90	.35	1.70
1970 Black	.18	1.94	.15	1.61	.17	1.85
All Cooperative Samples plus Non-cooperative Vocational Education Samples	.16	5.41	.26	10.00	.27	10.70
College Graduates	.12	1.13	.11	1.01	.05	0.40
Persons with California Mental Maturity IQ Less Than 100	.29	3.86	.39	6.16	.43	7.29

APPENDIX TABLE E-30

Coefficients of Determination and F-Ratios of Curriculum Structure, Average Hourly Wage Rate, For The First, Longest and Last Job since Leaving High School (continued)

	First Job		Longest Job		Last Job	
	R^2	F	R^2	F	R^2	F
Those Who Have Had No Post High School Education	.19	4.96	.28	8.16	.27	8.09
Persons Who have Completed Some Non-college Post High School Education	.31	2.80	.38	3.69	.45	4.88

APPENDIX TABLE E-31

DIFFERENCE IN AVERAGE MONTHLY EARNINGS, FIRST JOB AFTER LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL CURRICULUM COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM

	Academic	General	Vocational	Undetermined	Number of Observations
Total Sample	-60** (18)	-82** (20)	-42* (18)	-153** (53)	911
Males	-64* (26)	-97** (34)	-72* (30)	-265** (83)	397
Females	-63** (23)	-66** (24)	-15 (22)	-10 (71)	414
White Males	-54* (26)	-96* (37)	-66* (32)	-273** (89)	347
White Females	-45 (26)	-76** (28)	-9 (24)	-96 (79)	409
Black Males	-311* (137)	-225 (124)	-194 (116)	-326 (253)	50
Black Females	-99 (68)	-6 (69)	-18 (65)	284 (198)	105
1966 Cohort Males	-131** (44)	-130** (49)	-98* (44)	-332** (121)	195
1970 Cohort Males	-32 (31)	-136 (46)	-97 (40)	-227 (107)	202
1966 Cohort Females	-31 (40)	-79 (43)	-37 (34)	44 (103)	212
1970 Cohort Females	-85** (30)	-55 (31)	0 (30)	-87 (104)	302
1966 Cohort Whites	-63* (31)	-123** (35)	-63* (28)	-221** (84)	352

APPENDIX TABLE E-31

Difference in Average Monthly Earnings, First Job After Leaving High School, Cooperative Vocational Curriculum Compared to Academic, General, Vocational and Undetermined Curriculum (continued)

	Academic	General	Vocational	Undetermined	Number of Observations
1970 Cohort Whites	-36 (23)	-76* (30)	-24 (28)	-192* (81)	404
1966 Cohort Black	-234* (114)	-71 (105)	-153 (107)	217 (200)	55
1970 Cohort Black	-171 (73)	-153 (76)	-117 (68)	-183 (208)	100
All Cooperative Samples plus Noncooperative Vocational Education Samples	---	---	-56** (20)	---	461
College Graduates	19 (59)	-29 (92)	-28 (73)	174 (141)	110
Persons with California Mental Maturity IQ Less than 100	-110 (73)	-101* (48)	-85 (44)	188 (134)	161
Those Who have had No Post High School Education	-3 (29)	-99** (31)	-34 (27)	-191** (65)	336
Persons Who have Completed Some Noncollege Post High School Education	-205** (64)	-109 (55)	-17 (52)	---	108

APPENDIX TABLE E-32
DIFFERENCE IN AVERAGE MONTHLY EARNINGS, LONGEST JOB AFTER LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL EDUCATION COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM

	Academic	General	Vocational	Undetermined	Number of Observations
Total Sample	-54** (18)	-81** (22)	-38* (19)	-151** (57)	911
Males	-58* (27)	-80* (36)	-26 (32)	-172* (86)	397
Females	-59* (25)	-85** (26)	-44 (24)	-92 (77)	414
White Males	-53 (28)	-76* (39)	-7 (34)	-169 (93)	347
White Females	-66* (27)	-100** (29)	-38 (25)	-152 (83)	409
Black Males	-301* (127)	-287* (115)	-255* (107)	-381 (235)	50
Black Females	-24 (82)	13 (83)	-4 (79)	81 (239)	105
1966 Cohort Males	-61 (48)	-57 (53)	-6 (47)	-107 (131)	195
1970 Cohort Males	-57 (31)	-147 (47)	-75 (41)	-229 (109)	202
1966 Cohort Females	-23 (44)	-111* (47)	-79* (37)	-88 (112)	212
1970 Cohort Females	-88** (31)	-53 (33)	-2 (31)	-105 (110)	302
1966 Cohort Whites	-51 (34)	-113** (38)	-36 (31)	-139 (91)	352

APPENDIX TABLE E-32

Difference in Average Monthly Earnings, Longest Job After Leaving High School, Cooperative Vocational Education Compared to Academic, General, Vocational and Undetermined Curriculum (continued)

	Academic	General	Vocational	Undetermined	Number of Observations
1970 Cohort Whites	-58* (23)	-91** (31)	-19 (29)	-216** (82)	404
1966 Cohort Black	-32 (143)	-42 (132)	-159 (134)	134 (252)	55
1970 Cohort Black	-146 (80)	-142 (83)	-94 (74)	-181 (226)	100
All Cooperative Samples plus Noncooperative Vocational Education Samples	---	---	-37 (20)	---	453
College Graduates	13 (81)	100 (125)	-4 (100)	46 (192)	110
Persons with California Mental Maturity IQ Less than 100	5 (76)	-80 (51)	-54 (46)	-187 (141)	161
Those Who have had No Post High School Education	-28 (29)	-115** (32)	-34 (27)	-158* (67)	336
Persons Who have Completed Some Noncollege Post High School Education	-104 (65)	-103 (56)	-33 (53)	---	108

APPENDIX TABLE E-33

IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, AVERAGE MONTHLY EARNINGS OF LONGEST JOB SINCE LEAVING HIGH SCHOOL

	Coop-erative	Academic	General	Vocational	Unde-termined	Grand Mean
Total Sample	43	-11	-38	5	-108	357
Males	43	-15	-37	17	-130	435
Females	45	-14	-40	1	-47	297
White Males	35	-18	-41	29	-134	433
White Females	47	-20	-54	8	-105	298
Black Males	250	-50	-37	-5	-131	447
Black Females	2	-21	15	-1	83	294
1966 Cohort Males	34	-27	-23	28	-73	552
1970 Cohort Males	68	11	-79	-7	162	322
1966 Cohort Females	43	20	-68	-36	-45	390
1970 Cohort Females	40	-48	-14	38	-65	231
1966 Cohort White	42	-9	-71	6	-97	462
1970 Cohort White	43	-15	-48	25	-172	271
1966 Cohort Black	67	35	25	-92	201	504
1970 Cohort Black	108	-37	-34	12	-73	225

APPENDIX TABLE E-33

Impact of High School Curricula Expressed as Deviations from the Grand Mean of the Study Sample, Average Monthly Earnings of Longest Job Since Leaving High School (continued)

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
All Cooperative Samples plus Non-cooperative Vocational Education Samples	18	---	---	-18	---	396
College Graduates	-15	-2	86	-18	31	394
California Mental Maturity IQ Less than 100	49	54	-31	-5	-138	372
Those Who have had No Post High School Education	48	20	-68	14	-110	365
Persons Who have Completed Some Non-college Post High School Education	52	-52	-51	19	52	447

APPENDIX TABLE E-34
ANALYSIS OF CURRICULUM STRUCTURE, AVERAGE MONTHLY EARNINGS, LONGEST JOB AFTER LEAVING HIGH SCHOOL

	Academic Credits	Voca-tional Credits	Cooper-ative Credits	Cooper-ative Status	Number of Obser-vations
Total Sample	4 (3)	16** (4)	-5 (7)	33 (41)	911
Males	4 (4)	27** (6)	-6 (13)	23 (74)	397
Females	4 (3)	8 (6)	-0.04 (8)	28 (49)	514
White Males	5 (4)	31** (7)	-11 (13)	34 (76)	348
White Females	6 (4)	15* (6)	-9 (8)	65 (49)	409
Black Males	-4 (15)	20 (16)	29 (53)	-33 (367)	49
Black Females	1 (8)	-11 (13)	27 (33)	-132 (299)	105
1966 Cohort Males	3 (6)	27** (9)	-11 (19)	35 (99)	196
1970 Cohort Males	13* (6)	27* (9)	-11 (19)	99 (124)	201
1966 Cohort Females	11 (6)	6 (10)	-4 (12)	70 (66)	212
1970 Cohort Females	-7 (5)	13 (7)	6 (12)	-77 (82)	302
1966 Cohort Whites	9* (4)	21** (7)	-15 (10)	88 (55)	353

APPENDIX TABLE E-34
Analysis of Curriculum Structure, Average Monthly Earnings, Longest Job After Leaving High School (continued)

	Academic Credits	Vocational Credits	Cooperative Credits	Cooperative Status	Number of Observations
1970 Cohort Whites	5 (4)	25** (6)	-11 (11)	35 (70)	404
1966 Cohort Black	9 (10)	-30 (18)	-16 (44)	224 (245)	55
1970 Cohort Black	-7 (10)	8 (11)	58 (44)	-386 (333)	99
All Cooperative Samples plus Non-cooperative Vocational Education	5 (4)	15 (8)	-6 (10)	40 (58)	453
College Graduates	10 (11)	11 (20)	44 (48)	-232 (211)	110
Persons with California Mental Maturity IQ Less than 100	5 (7)	10 (9)	24 (15)	-124 (98)	161
Those Who have had No Post High School Education	7 (4)	20** (6)	-4 (10)	7 (69)	336
Persons Who have Completed Some Non-college Post High School Education	6 (9)	25 (13)	-20 (22)	93 (119)	107

APPENDIX TABLE E-35
DIFFERENCE IN AVERAGE MONTHLY EARNINGS, LAST JOB AFTER LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL CURRICULUM COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM

	Academic	General	Vocational	Undetermined	Number of Observations
Total Sample	-57** (18)	-85** (21)	-23 (19)	-170** (56)	911
Males	-71** (26)	-69* (35)	2 (31)	-225** (84)	397
Females	-50* (25)	-94** (26)	-38 (23)	-70 (75)	414
White Males	-68* (27)	-65 (38)	8 (33)	-233* (92)	347
White Females	-69* (26)	-114** (28)	-22 (25)	-93 (81)	409
Black Males	-209 (125)	-202 (113)	-82 (105)	-307 (231)	50
Black Females	15 (76)	22 (77)	-11 (73)	-107 (221)	105
1966 Cohort Males	-95* (47)	-24 (52)	14 (46)	-234 (128)	195
1970 Cohort Males	-59 (31)	-162** (50)	-45 (43)	-237* (111)	202
1966 Cohort Females	-24 (41)	-169** (44)	-70* (35)	-139 (106)	212
1970 Cohort Females	-85** (31)	-50 (33)	-3 (31)	-14 (110)	302
1966 Cohort Whites	-79* (33)	-121** (38)	-27 (30)	-219* (90)	353

APPENDIX TABLE E-35

Difference in Average Monthly Earnings, Last Job After Leaving High School, Cooperative Vocational Curriculum Compared to Academic, General, Vocational and Undetermined Curriculum (continued)

	Academic	General	Vocational	Undetermined	Number of Observations
1970 Cohort Whites	-60* (23)	-94** (31)	-4 (28)	-169* (82)	404
1966 Cohort Black	179 (131)	111 (121)	35 (123)	138 (230)	55
1970 Cohort Black	-139 (79)	-137 (80)	-81 (72)	-222 (223)	100
All Cooperative Samples plus Non-cooperative Vocational Education Samples	---	---	-32 (21)	---	461
College Graduates	-95 (74)	11 (115)	-79 (91)	-316 (177)	110
Persons with California Mental Maturity IQ Less than 100	-70 (74)	-79 (49)	-23 (45)	-69 (137)	161
Those Who have had No Post High School Education	-20 (29)	-113** (32)	-21 (27)	-145* (66)	336
Persons Who have Completed Some Non-college Post High School Education	-171** (61)	-121* (53)	-20 (50)	---	108

APPENDIX TABLE E-36

COEFFICIENTS OF DETERMINATION AND F-RATIO OF AVERAGE MONTHLY EARNINGS FOR THE FIRST, LAST AND LONGEST JOBS SINCE LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL CURRICULUM COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM

	First Job		Longest Job		Last Job	
	R^2	F	R^2	F	R^2	F
Total Sample	.19	14.05	.30	25.21	.33	29.33
Males	.17	5.61	.31	12.39	.35	14.54
Females	.15	6.25	.20	9.05	.27	12.85
White Males	.18	5.67	.31	11.6	.35	13.91
White Females	.16	5.86	.22	8.42	.27	11.26
Black Males	.27	1.04	.48	2.59	.47	2.42
Black Females	.21	1.89	.28	2.70	.42	5.02
1966 Males	.17	3.06	.13	2.36	.14	2.39
1970 Males	.21	4.70	.21	4.69	.23	4.79
1966 Females	.11	1.92	.10	1.64	.13	2.19
1970 Females	.11	2.68	.10	2.46	.09	2.25
1966 White	.18	5.53	.21	7.07	.19	6.09
1970 White	.14	4.90	.17	6.01	.16	5.84
1966 Black	.53	3.52	.32	1.50	.27	1.42
1970 Black	.21	2.22	.15	1.27	.20	1.96
All Cooperative Samples plus Non-cooperative Vocational Education Samples	.19	7.69	.28	13.16	.30	14.76
College Graduates	.12	1.11	.13	1.25	.16	1.59

APPENDIX TABLE E-36

Coefficients of Determination and F-Ratio of Average Monthly Earnings for the First, Last and Longest Jobs since Leaving High School, Cooperative Vocational Curriculum Compared to Academic, General, Vocational and Undetermined Curriculum (continued)

	First Job		Longest Job		Last Job	
	R^2	F	R^2	F	R^2	F
Persons with California Mental Maturity IQ Less Than 100	.31	4.36	.43	7.23	.49	9.12
Those Who Have Had No Post High School Education	.23	6.44	.31	9.51	.31	9.83
Persons Who have Completed Some Non-college Post High School Education	.35	3.53	.42	4.91	.51	6.87

APPENDIX TABLE E-37
COEFFICIENTS OF DETERMINATION AND F-RATIOS OF CURRICULUM STRUCTURE, AVERAGE MONTHLY EARNINGS, FOR THE FIRST, LONGEST AND LAST JOB SINCE LEAVING HIGH SCHOOL

	First Job		Longest Job		Last Job	
	R^2	F	R^2	F	R^2	F
Total Sample	.20	14.83	.31	26.45	.34	30.44
Males	.20	6.66	.35	14.51	.38	16.70
Females	.14	5.93	.20	9.12	.26	12.70
White Males	.20	6.57	.35	13.72	.38	15.96
White Females	.16	5.90	.22	8.57	.27	11.04
Black Males	.32	1.24	.52	2.90	.54	3.17
Black Females	.20	1.80	.28	2.77	.42	5.11
1966 Males	.18	3.24	.17	3.07	.14	2.60
1970 Males	.27	5.70	.27	5.88	.30	6.74
1966 Females	.11	1.89	.10	1.72	.12	2.13
1970 Females	.11	2.80	.11	2.75	.10	2.56
1966 White	.18	5.76	.23	7.67	.20	6.60
1970 White	.17	6.10	.20	7.15	.19	7.10
1966 Black	.47	2.74	.34	1.70	.30	1.35
1970 Black	.21	2.07	.17	1.57	.21	2.14
All Cooperative Samples plus Non-cooperative Vocational Education Samples	,19	7.00	.29	11.99	.31	13.25
College Graduates	.10	0.91	.15	1.39	.16	1.54
Persons with California Mental Maturity IQ Less Than 100	.32	4.59	.45	7.99	.50	9.85

APPENDIX TABLE E-37

Coefficients of Determination and F-Ratios of Curriculum Structure, Average Monthly Earnings, For the First, Longest and Last Job since Leaving High School (continued)

	First Job		Longest Job		Last Job	
	R^2	F	R^2	F	R^2	F
Those Who Have Had No Post High School Education	.24	6.58	.33	10.30	.33	10.40
Persons Who have Completed Some Non-college Post High School Education	.35	3.20	.44	4.83	.51	6.20

APPENDIX TABLE E-38

DIFFERENCE IN LABOR FORCE EXPERIENCE FOR MONTHS ELAPSED BETWEEN LEAVING HIGH SCHOOL AND ACQUIRING FIRST JOB LASTING ONE MONTH OR LONGER FOR COOPERATIVE VOCATIONAL CURRICULUM COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	Academic	General	Vocational	Undetermined	Number of Observations
Total Sample	-7.2* (3.1)	-3.7 (4.0)	-5.2 (3.4)	-2.9 (8.8)	219
Males	-10.3* (4.5)	-14.7* (6.6)	-8.7 (5.6)	-5.9 (10.8)	93
Females	-4.1 (4.5)	2.1 (5.1)	-2.3 (4.4)	9.0 (15.6)	126
Whites	-8.8** (3.2)	-6.6 (4.3)	-7.8* (3.7)	-6.9 (10.6)	191
Blacks and Others	9.6 (11.4)	6.1 (12.0)	15.8 (10.4)	42.1* (19.8)	28

APPENDIX TABLE E-39

DIFFERENCE IN LABOR FORCE EXPERIENCE FOR TOTAL NUMBER OF MONTHS EMPLOYED SINCE LEAVING HIGH SCHOOL FOR COOPERATIVE VOCATIONAL CURRICULUM COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	Academic	General	Vocational	Undetermined	Number of Observations
Total Sample	-2.2 (1.2)	.5 (1.5)	-2.8* (1.3)	-2.2 (3.4)	219
Males	.6 (1.8)	4.9 (2.7)	-.5 (2.2)	1.6 (4.3)	93
Females	-3.9* (1.7)	-2.0 (2.0)	-4.3* (1.7)	-7.6 (6.1)	126
Whites	-2.4 (1.3)	-.7 (1.7)	-3.1* (1.4)	-1.3 (4.1)	191
Black and Others	-.3 (4.9)	11.1* (5.2)	5.2 (4.5)	2.7 (8.5)	28

APPENDIX TABLE E-40

DIFFERENCE IN LABOR FORCE EXPERIENCE FOR PERCENT OF UNEMPLOYMENT FOR COOPERATIVE VOCATIONAL CURRICULUM COMPARED TO ACADEMIC, GNEERAL, VOCATIONAL AND UNDETERMINED CURRICULUM FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	Academic	General	Vocational	Undetermined	Number of Observations
Total Sample	.022 (.040)	.004 (.050)	.016 (.043)	-.053 (.112)	219
Males	-.032 (.058)	-.032 (.087)	.006 (.072)	-.112 (.139)	93
Females	.071 (.060)	.035 (.069)	.037 (.058)	-.012 (.207)	126
Whites	.012 (.042)	-.009 (.056)	.001 (.047)	-.076 (.136)	191
Blacks and Others	.172 (.160)	.032 (.183)	.113 (.147)	.079 (.270)	28

APPENDIX TABLE E-41

COEFFICIENTS OF DETERMINATION AND F-RATIOS OF LABOR FORCE EXPERIENCE, COOPERATIVE VOCATIONAL EDUCATION STUDENTS COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM STUDENTS FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	First Job Lasting One Month or Longer		Total Number of Months Employed Since Leaving High School		Percentage of Time Unemployed Since Leaving High School	
	R^2	F	R^2	F	R^2	F
Total Sample	.18	3.12	.59	21.37	.04	.58
Males	.29	2.43	.58	8.44	.08	.47
Females	.22	2.47	.64	15.61	.07	.58
Whites	.17	2.86	.61	20.93	.04	.51
Blacks	.61	2.00	.70	2.91	.29	.51

APPENDIX TABLE E-42
COEFFICIENTS OF DETERMINATION AND F-RATIOS OF CURRICULUM STRUCTURE, LABOR FORCE EXPERIENCE FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	First Job Lasting One Month or Longer		Total Number of Months Employed Since Leaving High School		Percentage of Time Unemployed Since Leaving High School	
	R^2	F	R^2	F	R^2	F
Total Sample	.20	3.59	.59	20.73	.07	1.26
Males	.28	2.34	.57	8.01	.19	1.43
Females	.26	2.97	.65	16.07	.08	.76
Whites	.20	3.34	.60	20.61	.08	1.37
Blacks	.55	1.54	.65	2.35	.36	.83

APPENDIX TABLE E-43

DIFFERENCE IN AVERAGE HOURLY WAGE RATE, FIRST JOB AFTER LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL CURRICULUM COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM, FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	Academic	General	Vocational	Undetermined	Number of Observations
Total Sample	-.50 (.20)	-.39 (.24)	-.28 (.21)	-.46 (.51)	279
Males	-.83** (.32)	-.83 (.43)	-.35 (.38)	-.72 (.67)	113
Females	-.27 (.27)	-.30 (.30)	-.30 (.26)	-.09 (.79)	166
Whites	-.49* (.21)	-.48 (.26)	-.24 (.23)	-.86 (.55)	237
Blacks and Others	-1.15 (.68)	.06 (.65)	.20 (.62)	1.58 (1.39)	42

APPENDIX TABLE E-45
DIFFERENCE IN AVERAGE HOURLY WAGE RATE, LAST JOB AFTER LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL CURRICULUM COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM, FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	Academic	General	Vocational	Undetermined	Number of Observations
Total Sample	-.29 (.22)	-.42 (.26)	-.27 (.23)	-.57 (.55)	279
Males	-.42 (.36)	-.79 (.48)	-.13 (.43)	-.46 (.75)	113
Females	-.21 (.29)	-.45 (.32)	-.42 (.28)	-.63 (.84)	166
Whites	-.38 (.23)	-.52 (.29)	-.22 (.26)	-.77 (.61)	237
Blacks and Others	-.59 (.73)	.18 (.71)	.34 (.67)	.33 (1.52)	42

APPENDIX TABLE E-44

DIFFERENCE IN AVERAGE HOURLY WAGE RATE, LONGEST JOB AFTER LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL CURRICULUM COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM, FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	Academic	General	Vocational	Undetermined	Number of Observations
Total Sample	-.35 (.22)	-.42 (.26)	-.35 (.22)	-.66 (.54)	279
Males	-.62 (.36)	-.78 (.48)	-.31 (.43)	-.69 (.75)	113
Females	-.15 (.28)	-.41 (.32)	-.44 (.27)	-.58 (.82)	166
Whites	-.45* (.22)	-.50 (.28)	-.30 (.25)	-.89 (.58)	237
Blacks and Others	-.61 (.75)	.25 (.73)	.36 (.69)	.35 (1.55)	42

APPENDIX TABLE E-46

COEFFICIENTS OF DETERMINATION AND F-RATIOS OF CURRICULUM STRUCTURE, AVERAGE HOURLY WAGE RATE FOR FIRST, LONGEST AND LAST JOB AFTER LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL CURRICULUM COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	First Job		Longest Job		Last Job	
	R^2	F	R^2	F	R^2	F
Total Sample	.23	5.28	.32	8.35	.35	9.37
Males	.34	3.67	.41	4.81	.41	4.87
Females	.25	3.68	.35	5.83	.41	7.46
Whites	.27	5.77	.34	8.17	.35	8.60
Blacks & Others	.51	2.00	.61	3.02	.62	3.21

APPENDIX TABLE E-47
COEFFICIENTS OF DETERMINATION AND F-RATIOS OF AVERAGE HOURLY WAGE RATE FOR FIRST, LAST AND LONGEST JOB HELD AFTER LEAVING HIGH SCHOOL FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	First Job		Longest Job		Last Job	
	R^2	F	R^2	F	R^2	F
Total Sample	.21	4.64	.30	7.66	.33	8.54
Males	.33	3.46	.38	4.23	.39	4.55
Females	.21	2.86	.31	4.96	.36	5.98
Whites	.23	4.66	.31	7.25	.32	7.62
Blacks & Others	.55	2.33	.61	3.03	.62	3.21

APPENDIX TABLE E-48

DIFFERENCE IN AVERAGE MONTHLY EARNINGS, FIRST JOB AFTER LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL CURRICULUM COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM, FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	Academic	General	Vocational	Undetermined	Number of Observations
Total Sample	75 (37)	-84 (44)	-57 (39)	-120 (91)	279
Males	-95 (57)	-173* (78)	-98 (69)	-201 (122)	113
Females	-75 (49)	-51 (55)	-42 (47)	17 (143)	166
Whites	-67 (39)	-96* (48)	-53 (43)	-202* (101)	237
Blacks and Others	-226* (111)	-29 (108)	28 (102)	286 (230)	42

APPENDIX TABLE E-49

DIFFERENCE IN AVERAGE MONTHLY EARNINGS, LONGEST JOB AFTER LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL CURRICULUM COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM, FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	Academic	General	Vocational	Undetermined	Number of Observations
Total Sample	-72 (38)	-94* (45)	-78 (40)	-177 (96)	279
Males	-99 (62)	-169* (84)	-75 (74)	-189 (131)	113
Females	-66 (50)	-82 (56)	-92 (48)	-142 (147)	166
Whites	-82* (40)	-108* (50)	-78* (44)	-217* (105)	237
Blacks and Others	-169* (126)	23 (122)	46 (115)	-37 (260)	42

APPENDIX TABLE E-50

DIFFERENCE IN AVERAGE MONTHLY EARNINGS, LAST JOB AFTER LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL CURRICULUM COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM, FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	Academic	General	Vocational	Undetermined	Number of Observations
Total Sample	-71 (38)	-105* (45)	-66 (40)	-245* (95)	279
Males	-87 (63)	-172* (85)	-59 (75)	-295* (133)	
Females	-73 (48)	-108 (54)	-84 (46)	-141 (141)	166
Whites	-80* (40)	-123* (50)	-55 (44)	-298** (105)	237
Blacks and Others	-172 (116)	0 (113)	16 (107)	-9 (240)	42

APPENDIX TABLE E-51
COEFFICIENTS OF DETERMINATION AND F-RATIOS OF CURRICULUM STRUCTURE, AVERAGE MONTHLY EARNINGS FOR FIRST, LONGEST AND LAST JOB AFTER LEAVING HIGH SCHOOL, COOPERATIVE VOCATIONAL CURRICULUM COMPARED TO ACADEMIC, GENERAL, VOCATIONAL AND UNDETERMINED CURRICULUM FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	First Job		Longest Job		Last Job	
	R^2	F	R^2	F	R^2	F
Total Sample	.23	5.33	.33	8.52	.35	9.58
Males	.33	3.41	.40	4.72	.40	4.69
Females	.23	3.28	.35	5.88	.42	7.78
Whites	.26	5.51	.34	8.28	.36	9.00
Blacks & Others	.52	2.10	.57	2.54	.63	3.33

APPENDIX TABLE E-52
COEFFICIENTS OF DETERMINATIONS AND F-RATIOS OF AVERAGE MONTHLY EARNINGS FOR FIRST, LAST AND LONGEST JOB HELD AFTER LEAVING HIGH SCHOOL FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	First Job		Longest Job		Last Job	
	R^2	F	R^2	F	R^2	F
Total Sample	.23	5.33	.32	8.52	.35	9.58
Males	.33	3.41	.40	4.72	.40	4.69
Females	.23	3.28	.35	5.88	.42	7.78
Whites	.26	5.51	.34	8.28	.36	9.00
Blacks & Others	.52	2.10	.57	2.54	.63	3.33

APPENDIX TABLE E-53

IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, AVERAGE MONTHS ELAPSED SINCE LEAVING HIGH SCHOOL AND ACQUIRING FIRST JOB LASTING ONE MONTH OR LONGER, FOR THE STUDY SAMPLE WITH LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN 55 PERCENT

	Coop-erative	Academic	General	Vocational	Unde-termined	Grand Mean
Total Sample	5.1	-2.0	1.4	-.0	2.3	12.6
Males	8.8	-1.6	-5.9	.0	2.9	12.5
Females	2.1	-2.0	4.2	-.3	11.1	12.6
Whites	6.8	-2.0	.2	-1.0	-.1	12.6
Blacks & Others	-10.7	-1.2	-4.7	5.1	31.4	12.4

APPENDIX TABLE E-54
ANALYSIS OF CURRICULUM STRUCTURE, LABOR FORCE EXPERIENCE FOR MONTHS ELAPSED BETWEEN LEAVING HIGH SCHOOL AND ACQUIRING FIRST JOB LASTING ONE MONTH OR LONGER FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	Cooperative Credits	Academic Credits	Vocational Credits	Cooperative Status	Number of Observations
Total Sample	17.7	-.2	-.3	-2.1	219
	(6.1)	(.3)	(.7)	(1.2)	
Males	7.7	-.1	.3	.3	93
	(12.9)	(.6)	(1.2)	(2.6)	
Females	14.4	-.5	-.7	-1.9	126
	(7.3)	(.4)	(.9)	(1.4)	
Whites	19.8**	-.1	-.2	-2.2	191
	(6.3)	(.4)	(.8)	(1.3)	
Blacks and Others	10.6	-.8	.5	-3.9	28
	(42.7)	(1.0)	(2.0)	(6.1)	

APPENDIX TABLE E-55

IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, TOTAL NUMBER OF MONTHS EMPLOYED SINCE LEAVING HIGH SCHOOL, FOR THE SAMPLE WITH LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN 55 PERCENT

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
Total Sample	1.6	-.6	2.1	-1.2	-.6	10.3
Males	-.8	-.2	4.1	-1.3	.8	9.9
Females	3.1	-.8	1.0	-1.2	-4.5	10.6
Whites	1.9	-.5	1.2	-1.1	-1.1	10.5
Blacks & Others	-3.9	-4.1	7.3	1.3	-1.2	9.0

APPENDIX TABLE E-56

ANALYSIS OF CURRICULUM STRUCTURE, LABOR FORCE EXPERIENCE FOR TOTAL NUMBER OF MONTHS EMPLOYED SINCE LEAVING HIGH SCHOOL FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	Cooperative Credits	Academic Credits	Vocational Credits	Cooperative Status	Number of Observations
Total Sample	1.8 (2.4)	-.0 (.1)	-.3 (.3)	.2 (.5)	219
Males	-7.3 (5.2)	-.0 (.2)	.2 (.5)	1.1 (1.1)	93
Females	4.6 (2.9)	-.1 (.2)	-.6 (.4)	.2 (.6)	126
Whites	1.3 (2.5)	-.0 (.1)	.2 (.3)	.3 (.5)	191
Blacks and Others	11.1 (18.3)	-.1 (.4)	-1.2 (.8)	-1.4 (2.6)	28

APPENDIX TABLE E-57

IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, PERCENT OF TIME UNEMPLOYED SINCE LEAVING HIGH SCHOOL, FOR THE SAMPLE WITH LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN 55 PERCENT

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
Total Sample	-1.4	.8	-1.1	.2	-6.7	6.5
Males	2.3	-.9	-.9	2.9	-8.9	6.0
Females	-4.6	2.5	-1.1	-.9	-5.8	6.8
Whites	-.5	.7	-1.4	-.4	-8.1	6.4
Blacks and Others	-10.4	6.9	-7.1	.9	-2.5	6.5

APPENDIX TABLE E-58
ANALYSIS OF CURRICULUM STRUCTURE, LABOR FORCE EXPERIENCE FOR PERCENT OF UNEMPLOYMENT FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	Cooperative Credits	Academic Credits	Vocational Credits	Cooperative Status	Number of Observations
Total Sample	.114 (.076)	-.008 (.004)	-.001 (.009)	-.025 (.015)	219
Males	.467** (.154)	-.008 (.007)	-.001 (.014)	-.089** (.031)	93
Females	.026 (.099)	-.007 (.006)	-.002 (.012)	-.014 (.019)	126
Whites	.120 (.079)	-.011* (.005)	-.007 (.010)	-.022 (.016)	191
Blacks and Others	.290 (.494)	.010 (.012)	.030 (.023)	-.081 (.071)	28

APPENDIX TABLE E-59

IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, AVERAGE HOURLY WAGE RATE ON FIRST, LONGEST AND LAST JOB SINCE LEAVING HIGH SCHOOL, FOR THE SAMPLE WITH LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN 55 PERCENT

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
First Job:						
Total Sample	.35	-.15	-.04	.07	-.11	1.45
Males	.62	-.21	-.20	.27	-.10	1.57
Females	.23	-.04	-.08	-.07	.14	1.37
Whites	.36	-.13	-.12	.12	-.50	1.46
Blacks & Others	.18	-.96	.24	.38	1.76	1.40
Longest Job:						
Total Sample	.30	-.04	-.12	-.05	-.35	1.63
Males	.50	-.12	-.29	.19	-.19	1.76
Females	.23	.08	-.18	-.21	-.35	1.55
Whites	.35	-.10	-.14	.06	-.53	1.63
Blacks & Others	-.03	-.63	.22	.33	.32	1.63
Last Job:						
Total Sample	.26	-.03	-.16	-.01	-.31	1.70

APPENDIX TABLE E-59

Impact of High School Curricula Expressed as Deviations from the Grand Mean of the Study Sample, Average Hourly Wage Rate on First, Longest and Last Job since Leaving High School, for the Sample with Labor Force Participation Rate Equal to or Greater than 55 Percent (continued)

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
Males	.36	-.06	-.43	.23	-.10	1.82
Females	.26	.05	-.19	-.16	-.37	1.61
Whites	.31	-.07	-.22	.08	-.46	1.71
Blacks & Others	-.01	-.60	.17	.33	.32	1.63

APPENDIX TABLE E-60

ANALYSIS OF CURRICULUM STRUCTURE, AVERAGE HOURLY WAGE RATE, FIRST JOB AFTER LEAVING HIGH SCHOOL, FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	Cooperative Credits	Academic Credits	Vocational Credits	Cooperative Status	Number of Observations
Total Sample	1.51** (.44)	.03 (.02)	.04 (.04)	-.22** (.08)	279
Males	.84 (.92)	.02 (.04)	.16* (.08)	-.13 (.18)	113
Females	1.44** (.51)	.019 (.03)	-.04 (.06)	-.17 (.09)	166
Whites	1.66** (.44)	.05* (.03)	.11* (.05)	-.28** (.09)	237
Blacks and Others	.82 (2.85)	-.12 (.07)	-.15 (.11)	-.01 (.40)	42

APPENDIX TABLE E-61

ANALYSIS OF CURRICULUM STRUCTURE, AVERAGE HOURLY WAGE RATE, LONGEST JOB AFTER LEAVING HIGH SCHOOL, FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	Cooperative Credits	Academic Credits	Vocational Credits	Cooperative Status	Number of Observations
Total Sample	1.27** (.47)	.05 (.03)	.04 (.05)	-.18* (.09)	279
Males	.35 (1.02)	.03 (.04)	.21* (.09)	-.10 (.19)	113
Females	1.31* (.53)	.05 (.03)	-.05 (.06)	-.13 (.10)	166
Whites	1.44** (.47)	.05* (.03)	.11* (.05)	-.25** (.09)	237
Blacks and Others	-.86 (3.05)	-.04 (.07)	-.15 (.12)	.21 (.43)	42

INDEX TABLE E-62

ANALYSIS OF CURRICULUM STRUCTURE, AVERAGE HOURLY WAGE RATE, LAST JOB AFTER LEAVING HIGH SCHOOL, FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	Cooperative Credits	Academic Credits	Vocational Credits	Cooperative Status	Number of Observations
Total Sample	1.45** (.47)	.04 (.03)	.03 (.05)	-.21* (.09)	279
Males	-.10 (1.03)	.01 (.04)	.18* (.09)	-.03 (.20)	113
Females	1.72** (.54)	.06 (.03)	-.04 (.06)	-.20* (.10)	166
Whites	1.64** (.49)	.05 (.03)	.10 (.05)	-.29 (.09)	237
Blacks and Others	-.83 (2.98)	-.03 (.07)	-.15 (.12)	.20 (.42)	42

APPENDIX TABLE E-63

IMPACT OF HIGH SCHOOL CURRICULA EXPRESSED AS DEVIATIONS FROM THE GRAND MEAN OF THE STUDY SAMPLE, AVERAGE MONTHLY EARNINGS ON FIRST, LONGEST AND LAST JOB SINCE LEAVING HIGH SCHOOL, FOR THE SAMPLE WITH LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN 55 PERCENT

	Cooperative	Academic	General	Vocational	Undetermined	Grand Mean
First Job:						
Total Sample	60	-15	-24	4	-60	229
Males	93	-2	-80	-5	-108	262
Females	48	-27	-3	6	65	207
Whites	58	-9	-38	5	-144	229
Blacks & Others	50	-176	21	78	336	228
Longest Job:						
Total Sample	65	-6	-29	-13	-112	261
Males	91	-8	-79	16	-98	294
Females	60	0	-22	-31	-82	239
Whites	72	-10	-36	-6	-145	262
Blacks & Others	24	-145	47	70	-13	258
Last Job:						
Total Sample	65	-5	-40	0	-180	260

APPENDIX TABLE E-63

Impact of High School Curricula Expressed as Deviations from the Grand Mean of the Study Sample, Average Monthly Earnings on First, Longest and Last Job Since Leaving High School, for the Sample with Labor Force Participation Rate Equal to ro Greater than 55 Percent (continued)

	Coop-erative	Academic	General	Vocational	Unde-termined	Grand Mean
Males	85	-2	-87	26	-210	300
Females	68	-5	-40	-16	-73	233
Whites	70	-10	-53	15	-288	262
Blacks & Others	40	-132	40	56	32	252

APPENDIX TABLE E-64

ANALYSIS OF CURRICULUM STRUCTURE, AVERAGE MONTHLY EARNINGS, FIRST JOB AFTER LEAVING HIGH SCHOOL, FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	Cooperative Credits	Academic Credits	Vocational Credits	Cooperative Status	Number of Observations
Total Sample	267** (79)	7 (4)	9 (8)	-39** (14)	279
Males	236 (166)	10 (7)	30* (14)	-42 (32)	113
Females	244* (94)	0 (6)	-3 (10)	-30 (17)	166
Whites	290** (81)	12* (5)	20* (9)	-51** (16)	237
Blacks and Others	212 (481)	-23 (11)	-19 (19)	-13 (68)	42

APPENDIX TABLE E-65

ANALYSIS OF CURRICULUM STRUCTURE, AVERAGE MONTHLY EARNINGS, LONGEST JOB AFTER LEAVING HIGH SCHOOL, FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	Cooperative Credits	Academic Credits	Vocational Credits	Cooperative Status	Number of Observations
Total Sample	215** (83)	8 (4)	7 (8)	-27 (15)	279
Males	68 (178)	7 (7)	38* (15)	-17 (34)	113
Females	225* (96)	6 (6)	-9 (10)	-19 (17)	166
Whites	234** (85)	10* (5)	17 (9)	-35* (17)	237
Blacks and Others	-84 (525)	-8 (12)	-23 (20)	29 (74)	42

APPENDIX TABLE E-66

ANALYSIS OF CURRICULUM STRUCTURE, AVERAGE MONTHLY EARNINGS, LAST JOB AFTER LEAVING HIGH SCHOOL, FOR THOSE WITH A CIVILIAN LABOR FORCE PARTICIPATION RATE EQUAL TO OR GREATER THAN .55

	Cooperative Credits	Academic Credits	Vocational Credits	Cooperative Status	Number of Observations
Total Sample	268** (82)	10 (4)	11 (8)	-39* (15)	279
Males	58 (182)	8 (7)	40* (15)	-18 (35)	113
Females	314** (91)	8 (6)	-2 (9)	-37* (16)	166
Whites	297** (84)	12* (5)	22* (9)	-51** (16)	237
Blacks and Others	-88 (486)	-6 (11)	-21 (19)	31 (66)	42

APPENDIX F

DEFINITIONS OF CURRICULA

APPENDIX F

DEFINITIONS OF CURRICULA

The content of the curricula is defined on the following pages.

1. Academic or College Preparatory Curriculum Identification

   The major characteristics of this curriculum are as follows:

   (a) A total of three or more units (six full semesters) in English and English-related courses, AND

   (b) A total of two or more units (four full semesters) in mathematics, such as algebra, trigonometry, geometry or advanced algebra. A general mathematics or general arithmetic course does not count, AND

   (c) A total of two or more units in science, such as chemistry, physics, biology, organic chemistry or qualitative analysis. The survey-type science course does not count, AND

   (d) A total of two or more units in any given foreign language, AND

   (e) If industrial education courses are taken, less than three units of credit in any given skill area.

   Omit (e) for co-op students. However, students at Patterson who meet the requirements of (a) through (d) are also to be coded as academic or college preparatory.

2. General Curriculum Identification

   The following are major distinctions:

   (a) Less than two units (four full semesters) of foreign language are taken, AND

   (b) Less than two (four full semesters) units of science are taken, AND

   (c) Less than two units (four full semesters) of mathematics are taken. The mathematics which is taken will usually be general arithmetic or general mathematics, AND

   (d) Less than two units (four full semesters) of credit is taken in any given industrial education, business education, distributive education or home economics skill specialty. There will generally be a mix of things such as industrial arts plus woodshop rather than a consistent concentration in a given occupational skill area, OR

Less than one unit of stenography may be taken.

Any non-co-op student who is not an academic is a general curriculum.

A lack of specificity, direction or career orientation characterizes this course of study. There will be a tendency to concentrate more heavily in the business education, distributive education, and home economics education areas relative to the industrial education area of study.

The student will have a greater tendency to take vocationally oriented courses but these will fail to reflect a career or occupational focus.

3. Vocational Education but not Co-op

Four semesters (2 years) in a particular skill specialty such as graphic arts, auto mechanics, etc. Or one year (2 semesters) of stenography or shorthand.

APPENDIX G

COMPARISON OF LONG AND SHORT FORM MAIL QUESTIONNAIRE SAMPLES

This appendix compares the relative post-high school educational and labor market experiences of those in the sample who responded to the long form of the mail questionnaire (Appendix B-1) and those who responded to the short form (Appendix B-2). After three mailings of the long form of the mail questionnaire, a short form was devised in the hopes of improving the overall sample response. Three mailings of the short form mail questionnaire were also sent out, but the response was relatively low as the sample sizes indicate in Appendix Table G-1. There is a gain of from 99 to 145 additional usable observations, depending on the dependent variable evaluated. Yet, some gain in the number of observations is desirable as long as the cost per observation remains low as was the case in this study.

The respondents from the short form mail questionnaire were not used in the basic analysis of the study sample since a limited number of variables existed for this questionnaire format, and, in some cases, their definitions were slightly different from those of the long form questionnaire. Therefore, the models estimated in this appendix are slightly different from the models estimated in Chapters 6 and 7 of the main body of the report. As a result, it is important to gain some notion of the differences between the two samples.

Even though the analysis of the study sample in Chapters 6 and 7 are not comparable with the present analysis, comparable models have been estimated in this appendix which employ the basic study sample (the long form respondents) and comparisons can be made based on this limited analysis.

Test for Sample Differences. First let us turn to the test which determines if the two samples can be said to come from the same population. This test is sometimes known as the "Chow" test, after its developer, Gregory Chow.[1] It is a test which, for a given regression model, allows one to determine if estimates of the regression model on two separate samples can be said to be equal. It amounts to a test of whether the two samples, for that estimated model, can be said to come from the same population. The results of the tests, for seven different dependent variables, are displayed in Appendix Table G-1. The tests do indicate that the respondents to the long and short form mail questionnaire come from different populations. There is the possibility, however, that models specified in a different way--with a different number of differently defined variables--might show a different result. However, the models used in this test were as similar to those used in the main body of the report as the data would allow. Therefore, we shall concentrate our discussion on these estimated models.

---

[1] See J. Johnston, Econometric Methods, New York: McGraw-Hill, 1960, p. 136 ff.

The dependent variables in this analytical comparison are seven in number:

Y_1: Probability of high school graduation, where probability ranges from zero to 1.0;

Y_2: Probability of acquiring some post-secondary education, where probability ranges from zero to 1.0;

Y_3: Total months employed, longest job held since leaving high school;

Y_4: Total months employed, last job held since leaving high school;

Y_5: Total months unemployed since leaving high school;

Y_6: Hourly wage rate before taxes and deductions, longest job since leaving high school, in dollars per hour; and,

Y_7: Hourly wage rate before taxes and deductions, last job since leaving high school, in dollars per hour.

The independent variables used in this analysis are as follows:

X_1: Curriculum, where 1 = cooperative student and 0 = non-cooperative student;

X_2: Sex, where 1 = female and 0 = male;

X_3: Ethnic origin, where 1 = white and 0 = black and other;

X_4: Socio-economic status of father's occupation during majority of the students elementary and high school years, an index number from 1 to 100;

X_5: Per capita family income during senior year, in dollars;

X_6: Grade point average, freshman year of high school, on a scale from .00 to 4.00;

X_7: High school graduation cohort, where 1 = 1970 cohort and 0 = 1966 cohort;

X_8: Type of questionnaire, where 1 = respondent to long form mail questionnaire and 0 = respondent to short form mail questionnaire;

X_9: Marital status, where 1 = married and 0 = not married;

X_{10}: Job experience during high school, where 1 = held a job for one month or longer during high school and 0 = did not hold a job for one month or longer during high school;

X_{11}: Post-secondary education experience, where 1 = respondent had some post-secondary education and 0 = respondent had no post-secondary education; and,

X_{12}: Hourly wage rate on longest job held while in school, in dollars.

The following models were estimated.

$$(1) \quad Y_{ij} = a_{0ij} + a_{1ij}X_{1ij} + a_{2ij}X_{2ij} + a_{3ij}X_{3ij} + a_{4ij}X_{4ij} + a_{5ij}X_{5ij} + a_{6ij}X_{6ij} + a_{7ij}X_{7ij} + a_{8ij}X_{8ij} + u_{ij}$$

Where,

Y = dependent variables as defined above;

$X_1,\ldots,X_8$ = independent variables as defined above;

$a_0,\ldots,a_8$ = partial regression coefficients;

u = an error term to formally complete the model;

i = observations 1, 2, 3,..., n; and

j = dependent variables Y_1 and Y_2.

$$(2) \quad Y_{ij} = b_{0ij} + b_{1ij}X_{1ij} + b_{2ij}X_{2ij} + b_{3ij}X_{3ij} + b_{4ij}X_{7ij} + b_{5ij}X_{8ij} + b_{6ij}X_{9ij} + b_{7ij}X_{10ij} + b_{8ij}X_{11ij} + u_{ij}$$

Where,

Y = dependent variables as defined above;

$X_1,\ldots,X_{11}$ = independent variables as defined above;

APPENDIX TABLE G-1
TEST FOR EQUALITY OF RELATIONSHIP BETWEEN TWO SETS OF REGRESSION COEFFICIENTS: RESPONDENTS TO THE LONG AND SHORT FORM MAIL QUESTIONNAIRE

Dependent Variable	Q_1	Q_2	Q_3	m	n	k	F
Y_1: Probability of high school graduation	52.38	49.06	3.32	830	112	7	8.97**
Y_2: Probability of post-high school education	209.35	164.66	44.69	783	99	7	33.67**
Y_3: Total months employed, longest job after high school	211,147.05	204,840.34	6,306.71	994	145	7	4.95**
Y_4: Total months employed, last job after high school	228,000.27	222,537.39	5,462.88	994	145	7	3.94**
Y_5: Total number of months unemployed after high school	36,680.43	35,945.86	734.57	994	145	7	3.28**
Y_6: Hourly pay before taxes & deductions, longest job since leaving high school	1,450.30	1,415.57	34.73	964	139	8	3.34**
Y_7: Hourly pay before taxes & deductions, last job since leaving high school	1,601.40	1,558.71	3.72	964	139	8	3.72**

APPENDIX TABLE G-1

Test for Equality of Relationship between Two Sets of Regression Coefficients: Respondents to the Long and Short Form Mail Questionnaire (continued)

Notes: ** = significant at the 1% level, two tailed test.

The F-ratio for the test is computed as follows:

$$F = (Q_3/k) \,/\, [Q_2/(m + n-2k)]$$

Where,

Q_1 = sum of the squared residuals from the model estimated by combining the two samples;

Q_2 = sum of the squared residuals from models estimated for each sample separately;

$Q_3 = Q_1 - Q_2$;

n = sample size, sample one;

m = sample size, sample two; and,

k = number of regressors in the regression model.

If the computed F-ratio is statistically significant, then the two samples represent different populations.

$b_0, \ldots, b_8$ = partial regression coefficients;

u = an error term to formally complete the model;

i = observations 1, 2, 3, ..., n; and,

j = dependent variables Y_3, Y_4, and Y_5.

(3) The model for variables Y_6 and Y_7 is the same as for variables Y_3 through Y_5 except for the addition of $b_{9ij}X_{12ij}$, where b_9 is a partial regression coefficient and X_{12} is defined as above.

Results of the Analysis. Appendix Tables G-2 and G-3 show the results of the analysis. Turn your attention first to Appendix Table G-2. Variable X_8 in Models (1) and (2) test to see if there is any difference in the average level of performance of those who responded to the long form and short form mail questionnaires. For the cooperative sample there is a significant difference in average level of performance with respect to Y_1, Y_3, Y_4, and Y_6. However, we see that respondents to the short form mail questionnaire are much more likely, on net, to acquire some type of post-secondary education. Also, they are unemployed a total of about three months less over the entire period since they left high school. Thus, it is only in the estimation of the regression models for Y_2 and Y_5 that we find an average difference between the two samples.

This does not mean, however, that exclusion of the respondents to the short form mail questionnaire from the study sample will have no effect on the results estimated using the set of observations of the study sample (respondents to the long form questionnaire and personal follow-ups).

Compare Appendix Tables G-2 and G-3. The addition of the short form respondents raises the average difference in the probability of graduation (Y_1) for cooperative students from .06 to .08. In addition, the level of statistical significance increases. As another example, consider Y_2, probability of acquiring some post-secondary education. In Table G-2, inclusion of the short form respondents results in no statistically significant difference between the cooperative and non-cooperative groups. (The actual level of statistical significance is 10%, but this is less than the conventionally accepted level of 5%.) However, in Table G-3, exclusion of the short form sample results in the estimate that the cooperative students have a net probability of acquiring post-secondary education which is .08 (8 percent) lower than the non-cooperative curriculum group.

Thus, the exclusion of the short-form respondents from the basic study sample does make a difference in the estimated effects of the cooperative

APPENDIX TABLE G-2
DIFFERENCE IN AVERAGE EFFECT OF COOPERATIVE PROGRAM
COMPARED TO NON-COOPERATIVE PROGRAM ON SELECTED INDICES OF EDUCATIONAL
AND LABOR MARKET PERFORMANCE: LONG FORM AND SHORT FORM QUESTIONNAIRE RESPONDENTS COMBINED

Dependent Variable	Coefficient of Variable Defining Cooperative-Non-cooperative (Standard error)	Coefficient of Dummy Variable, Indication Short-Form, Long-Form (Standard error)	n	R^2	F
Y_1: Probability of high school graduation	.08** (.02)	-.07 (.04)	942	.11	14.77**
Y_2: Probability of post-secondary education	-.06 (.04)	.90** (.07)	882	29	44.24**
Y_3: Total months employed, longest job after high school	2.21* (.98)	.26 (2.06)	1139	.32	66.26**
Y_4: Total months employed, last job after high school	2.57* (1.11)	-1.01 (2.14)	1139	.21	36.92**
Y_5: Total number of months unemployed after high school	-.22 (.41)	-3.06** (.85)	1139	.07	11.25**
Y_6: Hourly pay before taxes & deductions, longest job since leaving high school	.211* (.084)	.17 (.18)	1103	.24	38.69**
Y_7: Hourly pay before taxes & deductions, last job since leaving high school	.170 (.089)	.22 (.197)	1103	.26	42.87**

APPENDIX TABLE G-2

Difference in Average Effect of Cooperative Program Compared to Non-cooperative Program on Selected Indices of Educational and Labor Market Performance: Long Form and Short Form Questionnaire Respondents Combined (continued)

Notes: ** = significant at the 1% level, two tailed test.

* = significant at the 5% level, two tailed test.

n = sample size.

R^2 = coefficient of determination.

F = the F-ratio.

APPENDIX TABLE G-3

DIFFERENCE IN AVERAGE EFFECT OF COOPERATIVE PROGRAM COMPARED TO NON-COOPERATIVE PROGRAM ON SELECTED INDICES OF EDUCATIONAL AND LABOR MARKET PERFORMANCE: LONG FORM QUESTIONNAIRE RESPONDENTS ONLY

	Coefficient of Variable Defining Cooperative-Non-cooperative	n	R^2	F
Y_1: Probability of high school graduation	.06** (.02)	830	.11	14.81
Y_2: Probability of post-secondary education	-.08* (.04)	783	.16	20.64
Y_3: Total months employed, longest job after high school	3.75 (1.10)	994	.33	70.64
Y_4: Total months employed, last job after high school	3.75** (1.14)	994	.22	38.73
Y_5: Total number of months unemployed after high school	-.58 (.40)	994	.08	12.85
Y_6: Hourly pay before taxes & deductions, longest job since leaving high school	.206 (.094)	964	.27	43.31
Y_7: Hourly pay before taxes & deductions, last job since leaving high school	.154 (.099)	964	.29	47.63

Notes: ** = significant at the 1% level, two tailed test.

6

APPENDIX TABLE G-3

Difference in Average Effect of Cooperative Program Compared to Non-cooperative Program on Selected Indices of Educational and Labor Market Performance: Long Form Questionnaire Respondents Only (continued)

Notes: * = significant at the 5% level, two tailed test.

n = sample size.

R^2 = the coefficient of determination.

F = the F-ratio.

program. But this difference in effect is one of degree. The direction of effect stays the same. And, the size of the effect varies depending on the dependent variable and model in question. Unfortunately, the short-form sample simply could not be included in the study sample due to the limited number of variables on the short form mail questionnaire. Thus, overall, this discussion amounts to a discussion of a further aspect of non-response bias.